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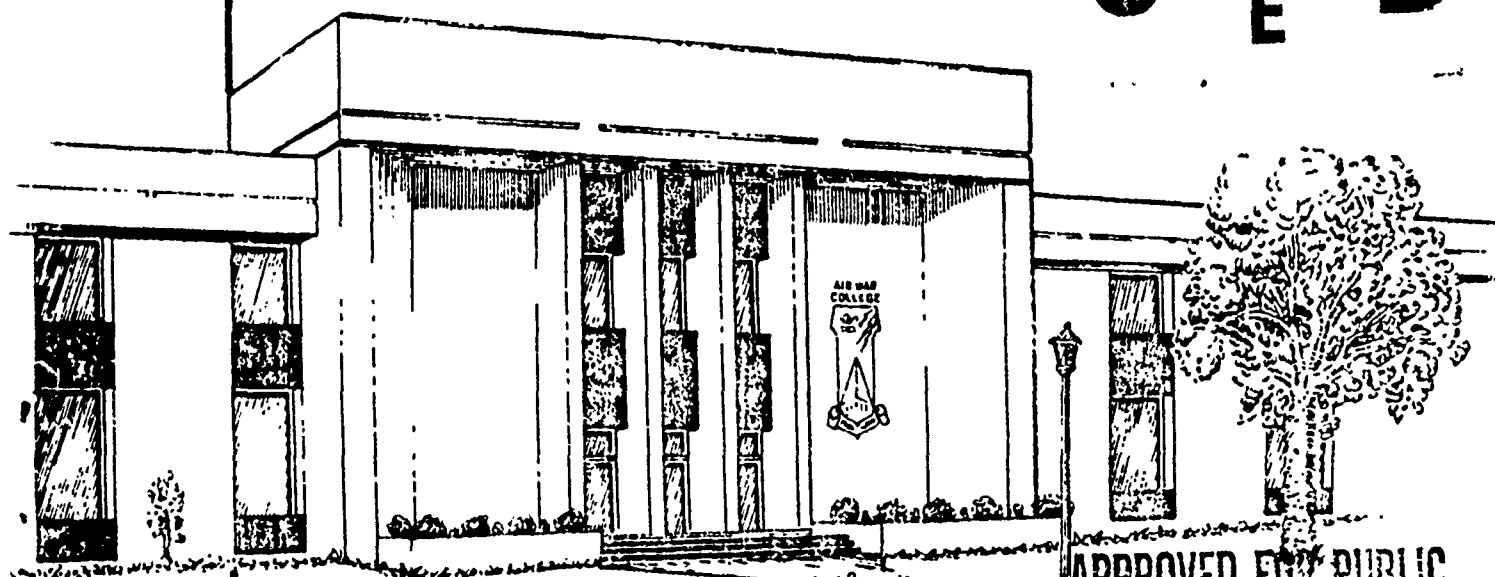
RESEARCH REPORT

WINNING THE WAR ON DRUGS - AN ECONOMIC PERSPECTIVE

COLONEL PETER DENEGA

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UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

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WINNING THE WAR ON DRUGS-
AN ECONOMIC PERSPECTIVE

by

Peter Denega
Colonel, USAF

A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE CURRICULUM
REQUIREMENT

Advisor: Lt. Col. J. O'Rourke

MAXWELL AIR FORCE BASE, ALABAMA

MAY 1990

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EXECUTIVE SUMMARY

TITLE: An Analysis of National Drug Control Strategies

AUTHOR: Peter Denega, Colonel, USAF

U.S. drug control policy goals are to increase drug price, depress demand, and restrict availability. With respect to cocaine, only one goal has been partially met - casual use of cocaine has decreased, but addict use has increased, and crack cocaine is widely available and inexpensive.

Despite higher rates of interdiction, the cartel lands more cocaine in the U.S. than market demand. As a result, there is a surplus of cocaine in the U.S. Under this condition, there are two reasons why interdiction is ineffective and only shows resolve. First, the cartel has increased its profitability by taking over the wholesale and first retail market thereby enabling it to absorb greater losses than interdiction can inflict. Second, to maximize profits the cartel has set the price of cocaine at levels which create a surplus. Given fixed prices, it can only reduce surplus to decrease supply which interdiction also achieves. An aggressive program to decrease demand would create an even greater surplus for the cartel to handle.

Interdiction is effective when the market is in equilibrium. Under this condition, interdiction creates a shortage which increases cocaine price. Synchronizing interdiction with destruction of the cartel's U.S. based wholesale/retail infrastructure coupled with immediate efforts to reduce demand hastens the effectiveness of interdiction.

BIOGRAPHICAL SKETCH

Colonel Peter Denega was commissioned in 1968 and assigned to the F-4 System Program Office (SPO) at Wright Patterson AFB, OH, as a crew escape system project engineer. After two years he was transferred to the B-1A SPO as project engineer for the bomber's escape capsule. He later served four more years in the same capacity at the SPO's on sight facility at Rockwell International, Los Angeles, CA. He returned to Wright Patterson AFB in 1976 and was the program manager for the Advance Concept Ejection Seat. In 1979 he was transferred to HQ AFSC, Andrews AFB, MD, where he was the Program Element Monitor and Systems Officer for life support and chemical defense equipment. He attended the Defense Systems Management College in 1982 and was once again assigned to Wright Patterson AFB -- this time to the B-1B SPO where he led the acquisition of all B-1B technical orders and training equipment. He returned to HQ AFSC in 1985 and was the Executive Officer to the Vice Commander for two years. In 1987 he was assigned to Eglin AFB, FL, where he served as the Deputy Base Commander and as Assistant Director for the Air to Surface Ballistic Program Office. He has a B.S. in management from the University of Maryland, a M.S. in Operations Management from Northrop University and is currently pursuing a Doctorate in Public Administration with the University of Alabama. His professional education includes Squadron Officer School, Air Command and Staff College, National Security Management, and Air War College.

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CHAPTER 1

INTRODUCTION

On September 14, 1984, Secretary of State Shultz addressed the Chamber of Commerce in Miami, Florida, and declared that the Reagan Administration was placing top priority on the war on drugs by attacking five fronts: prevention; treatment; research; law enforcement and interdiction; and international cooperation. The bottom line to his address--"We are confronting the threat, and making significant progress." (1:2) Six months later, his Assistant Secretary for International Narcotics Matters, Jon Thomas, in an address before the House Foreign Affairs Committee, remarked that the Reagan Administration was proud of its efforts these past four years to reduce drug demand in the U.S. (2:8) Five years later, Secretary of State Baker, in an address to the Forum Club in Houston, Texas, remarked that the U.S. war on drugs was in a "twilight" struggle -- light was beginning to shed on the problem both at home and abroad. (3:3) But is it? During the period among these addresses, consumption of cocaine in the U.S. has nearly doubled and, in the words of the U.S. Commissioner of Customs, "the traffickers are literally throwing it at our shores." (4:87)

Increased drug use has led to increased street crime, health problems, industrial accidents, and many other costs to society.

(5:1) Some researchers have estimated that social costs were \$60 billion in 1983 alone. (6:22) The increase in drug consumption since then, has no doubt, increased this figure

upward. Polls since the first half of 1988 show that the U.S. general public considers drug control to be the number one issue of domestic concern. (7:24; 8:2-11)

Numerous theories have been suggested to explain why the administration's expanded war on drugs has not decreased the severity of the drug epidemic plaguing this and other countries. For example, why has the overall supply of cocaine dramatically increased despite steady increases in seizures by various federal, state, local agencies and by the Department of Defense (DOD)? Furthermore, if seizures have increased, then why has the wholesale price of cocaine dropped from \$60,000 per kilogram in 1981 to less than \$15,000 per kilogram in 1989? What is the real problem and how severe is it?

Both government and private sources have provided many explanations and suggested various policy options to fight the drug problem. Some of the suggested policy options and strategies, when viewed from an economic perspective, could produce results which differ from what was intended. As a result, some policy decisions could undermine overall strategy objectives and divert resources from more effective remedies. An economic analysis of the drug market might offer a clearer perspective of the challenges policy makers confront to deal with the drug problem.

From an economic point of view, drug producers and sellers operate for the same reason as any other business--its corporate leaders seek to make profits. In order to make profits, the drug

producing and distribution firms must sell their goods for prices that are more than their total production costs while at the same time selecting output levels (supply) consistent with consumer demand. In this regard, Colombia's President Barco is absolutely correct when he said that "the only law that drug traffickers do not violate is the law of supply and demand." (9:2).

Likewise, consumer demand for illegal drugs is influenced by the same market mechanisms that influence consumer behavior towards legal goods. In this regard, almost all economic issues pertaining to the drug market and government interventions to influence its behavior can be reduced to questions about supply, demand, and market price.

This analysis examines the drug problem from an economic perspective with the goal of identifying national strategies, but not necessarily tactics, which may produce better and more effective results in fighting the war on drugs. A heavy reliance is placed on comparing the drug market with legal markets and the principal focus of this analysis is on the cocaine drug market.

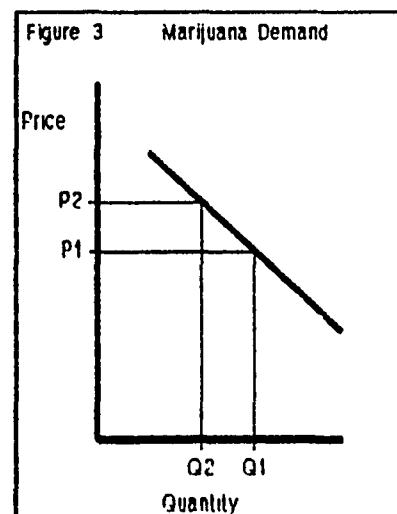
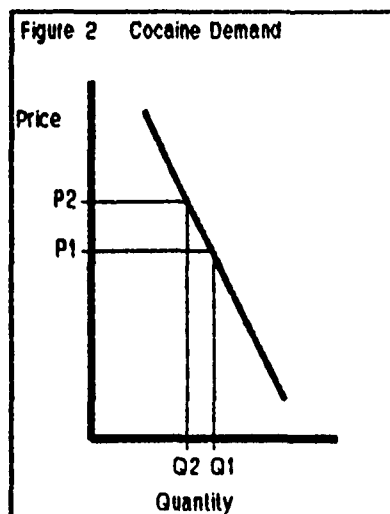
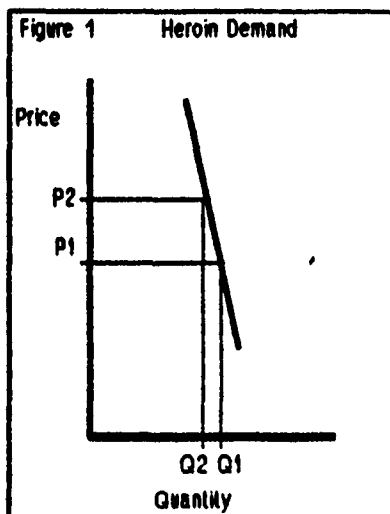
The second chapter covers some fundamental microeconomic tools to analyze the drug market, its characteristics, and the relationships between drug supply, demand, price, and market equilibrium. Those familiar with microeconomic theory may wish to skip this chapter and proceed directly to chapter three which characterizes the cartel and its ability to influence market behavior. Chapter four offers some possible explanations on how the cocaine drug market in the U.S. has expanded and why.

Chapter five analyzes the U.S. national drug strategy and its effectiveness in combating the drug problem. Chapter six provides a more in-depth analysis of alternative interdiction strategies and their effect on decreasing the supply of cocaine flowing into the U.S. Chapter seven provides some conclusions and recommends policy options to more effectively and efficiently reduce the supply and consumption of drugs, particularly cocaine, in the U.S.

CHAPTER 11
SUPPLY AND DEMAND

DEMAND

Drug demand is a schedule or curve that relates the various quantities that buyers are willing and able to purchase at any point in time to alternative prices, given all other things or variables remain equal (*ceteris paribus* variables). There are two properties which apply to all demand curves. First, demand curves are downward sloping, meaning that as the price increases, quantity demanded decreases and as price decreases the quantity demanded increases. This inverse relationship is known as the "Law of Demand". Secondly, demand curves have different slopes (elasticities) which represent consumer responsiveness to price changes. The more vertical the demand curve, the more it is inelastic--that is, the less responsive is the buyer to price changes. Figures 1,2, and 3 depict the notional demand curves for heroin, cocaine and marijuana.



Of the three drugs, marijuana is generally considered as the most elastic since it is less addictive than heroin or cocaine. Heroin demand, because of its highly addictive nature, is considered highly inelastic meaning that a significant change in price produces a less proportional change in quantity. The elasticity of demand for cocaine is generally somewhere in between the two other drugs. (10:606-609) A more thorough characterization of the elasticity of demand for cocaine will be presented later in this analysis.

Movement along the demand curve is referred to as quantity demanded -- note the relationship of price and the difference in quantity demanded as the price for each drug in Figures 1, 2, and 3 goes from P_1 to P_2 .

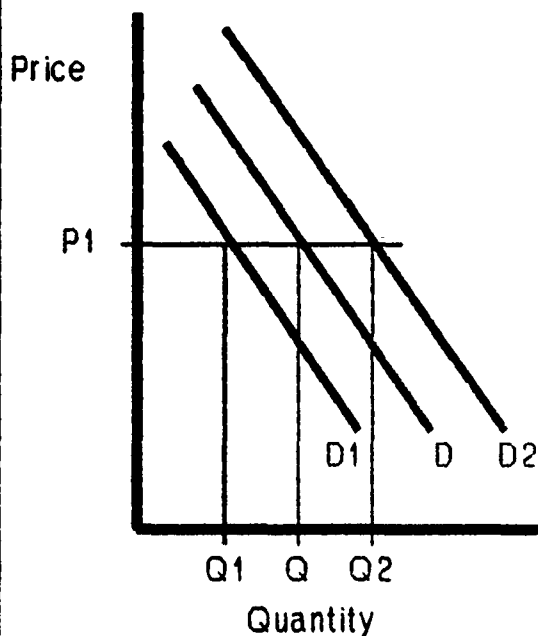
Demand curves shift, left or right, depending upon changes to ceteris paribus variables. In the drug market ceteris paribus variables might be such things as search costs (time and effort to obtain illicit drugs), risk of getting arrested for possession of drugs, preference for another drug (PCP, marijuana, "ice", ecstasy, etc.), or any number of other factors which can cause the consumer to change his behavior or attitude about consuming drugs.

For example, in Figure 4, the shift in the demand curve from D to D_1 might be the result of either a positive change in basic attitudes about drug consumption ("Just Say No" effect) or a fear of losing a job because of arrest. On the other hand, a shift in the demand curve to D_2 might be the result of easier

access or less fear of getting caught. Note the change in quantity if price were held constant at P_1 .

This brings about the importance of distinguishing between quantity demanded and change in demand. Many people reporting and analyzing the drug problem often refer to these terms interchangeably, but they are not the same and can lead to making the wrong conclusions or policy decisions.

Figure 4 Demand Shift



A shift in the demand curve results from changes in a consumer's willingness and ability to buy as a function of changes in the *ceteris paribus* variables (for example, personal income). When willingness or ability does not change, then the demand schedule (curve) does not change but the quantity demanded will vary as a function of the price of the item. In other words, if some individuals are predisposed to illicit drug use and *ceteris paribus* variables do not affect or modify their behavior or values, then only the price of the drug will dictate quantity demanded. If some of these individuals change their taste or values, then the demand (schedule) shifts. The importance of this distinction will become evident in

subsequent analyses in this study.

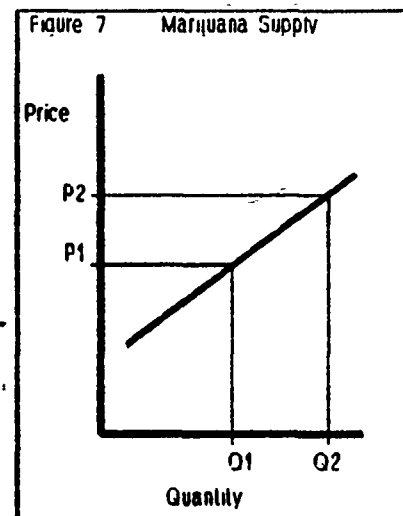
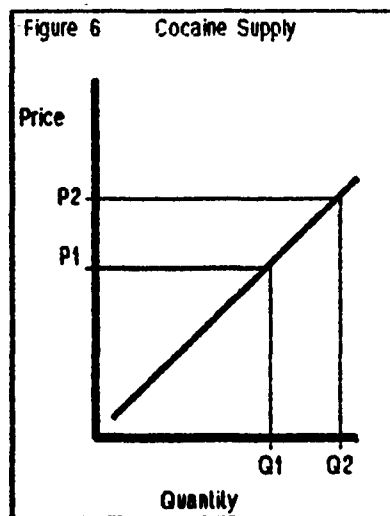
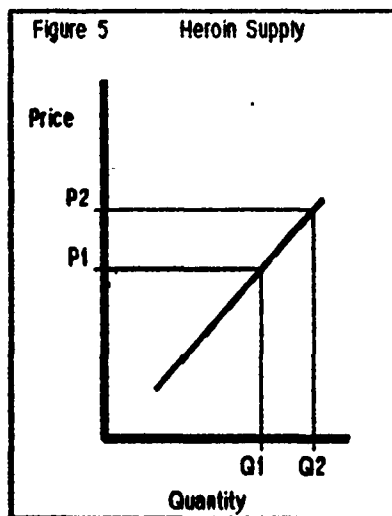
Supply

Supply schedules or curves relate the various quantities of drugs that traffickers seek to sell at any given point in time to alternative prices, *ceteris paribus*. Like drug demand curves, drug supply curves also have several common properties.

First, drug supply curves are positive sloping. A positive upward slope indicates that price and quantity supplied are directly related: as price increases, quantity supplied also increases; as price decreases, quantity supplied also decreases. The reason for this relationship is that if a drug trafficker who is already supplying a level that satisfies his profit expectations will be inspired to expand production only if the increased output will yield even higher profits. Therefore, higher prices are required to call forth higher levels of production, *ceteris paribus*.

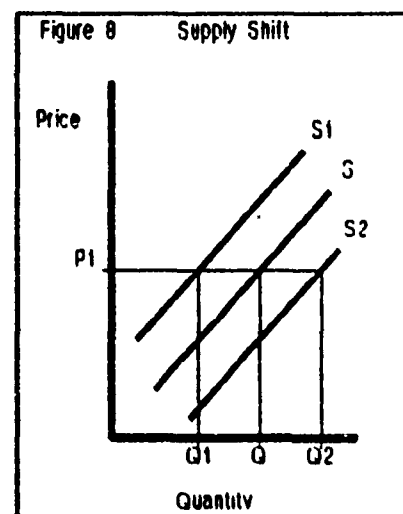
As shown in Figures 5, 6, and 7, the supply curve for heroin is approximately unit elastic -- that is, percent changes in quantity supplied respond roughly proportionately to percent changes in price. The supply curve for marijuana is slightly more elastic -- price changes induce proportionally larger changes in quantity, while cocaine supply is somewhere in-between. Note the change in quantity supplied as price is increased from P_1 to P_2 for each drug. (10:606-609)

Drug supply, like drug demand curves, shift to the right or left as a function of changes in the *ceteris paribus* variables.



For example, in Figure 8, a shift in the drug supply curve from S to S_1 could be the result of drug interdiction, law enforcement, eradication, etc. A shift from S to S_2 , on the other hand, might occur as the result of better technology, better production processes, more secure transshipment routes, better techniques to overcome government interdiction, etc. Note the change in quantity the producer is willing to provide at a constant price of P_1 .

As with the drug demand curve, it is important to emphasize the difference between supply and quantity supplied. Supply refers to an entire supply schedule or curve. A change in supply refers to a shift, left or right, in a supply curve as a result of changes in the ceteris paribus variables. Quantity supplied refers to one point on the

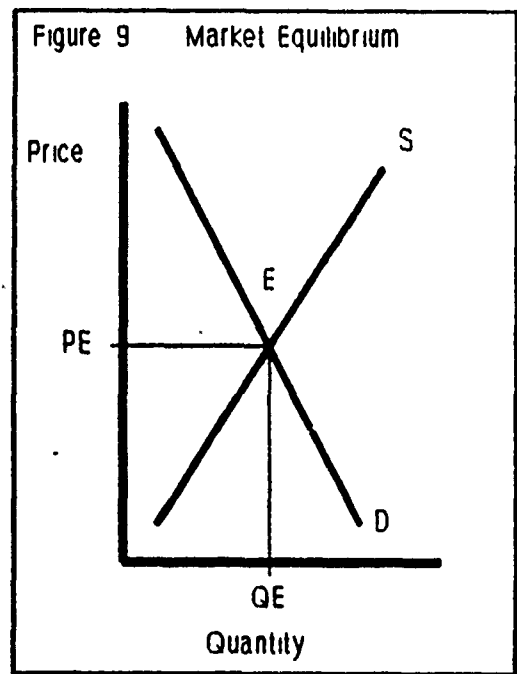


supply curve or to one price/quantity combination on the supply curve. Movement along the same supply curve refers to changes in quantity supplied along that curve. The importance of this difference will, as in the case of the demand curve, become more evident in later analyses.

Equilibrium of Demand and Supply

As previously shown, demand and supply curves are nothing more than simple models of how drug buyers and sellers are likely to behave in the drug market place. By themselves, they cannot tell a complete story, but when analyzed together, they reveal a great deal about consumer and supplier behavior. Superimposing the supply and demand curves from the previous discussion onto the same graph as shown in Figure 9 immediately yields the point at which the drug market clears-- that is, the point at which it is in equilibrium (point E).

At equilibrium in the drug market, point E, the intention of the drug buyers correspond exactly to the intentions of the drug sellers. The quantity that the drug buyers seek to purchase (quantity demanded) is exactly equal to the quantity that sellers seek to sell (quantity supplied) and therefore the equilibrium quantity is Q_E and the equilibrium price is P_E .



In the short run, the intentions and behavior of both the consumer and supplier will not always match and as a result of shifts in either supply, demand, or both and the drug market is invariably in disequilibrium. However, over the long run, the intentions and behavior of consumers and sellers eventually match but both price and quantity provided could vary.

The next chapter characterizes the cocaine traffickers and provides some insight into their abilities and limitations to influence or control market behavior.

Chapter III

The CARTEL AND THE DRUG MARKET

It is widely acknowledged that the drug cartel in Colombia, which controls about 80% of the cocaine trade in South America, is not in fact a cartel in the economic sense-- that is, it does not regulate production among its members to influence market price. Instead, its main functions are coordination of activities among the various members of the cartel, sharing information about export costs, contributing to bribes, exchanging information on transshipment routes, participating in assassinations of judges, journalists, and law enforcement personnel and occasionally sharing each others' inventories to meet customer demand. (11:261; 12:24) Some government analysts describe the cartel as a sophisticated commodity business and others suggest it is run like a "FORTUNE 500" company. (13:29)

In addition, the cartel has been steadily acquiring control of approximately \$5.5 billion in property and land estates and putting together paramilitary groups which killed nearly 500 persons in 1988. (14:24; 15:13) In Medellin, Colombia, 10 people are killed every 24 hours, giving the city a per capita homicide rate nearly nine times that of New York City. (16:31) Aside from the lawlessness, it is highly likely that the cartel probably employs economists to provide strategic advice concerning market strategies--a point that will be discussed in the next chapter.

In effect, it can be concluded that the Colombian cartel is

a confederation of between five and ten shrewd and ruthless Colombian organizations, who function almost like an oligopolist, or a dominant firm, producing a homogeneous product in a legal market. (17:27) Like the steel or coal industry, cocaine is a homogeneous product with no known "name brands" or product differentiation. Smaller independent traffickers, who are considered non-dominant firms, make up the rest of the South American cocaine producers. (18:27)

The cartel, as the dominant firm, directly influences the non-dominant firm's profit maximizing decisions regarding output, and price. In other words, the non-dominants are incapable of influencing the market price of cocaine by increasing or decreasing cocaine supply. They just do not command enough market share to make a difference. On the other hand, the cartel can affect market equilibrium price by expanding or decreasing supply. However, neither the cartel nor the non-dominant firms can change price, but not supply, without putting the market into disequilibrium.

For example, in Figure 10, suppose the cartel decided to increase the price of cocaine from P_E to P_1 . Drug traffickers would choose to expand output from the equilibrium quantity or Q_E to Q_{S1} . Correspondingly, quantity demanded reduces to Q_{D2} . What's the overall effect? At price P_1 , the market is no longer in equilibrium. Instead there is a surplus of cocaine measured by the difference between Q_{D2} and Q_{S2} . Over time, the surplus would induce sellers to bid the price down so that they could sell

their excess cocaine until reaching market equilibrium.

Conversely, in Figure 11, if the cartel decreased price to P_1 , then the quantity supplied is Q_{S1} , while quantity demanded is Q_{D1} , thereby creating a shortage represented by the difference between Q_{S1} and Q_{D1} . The shortage would prompt buyers to compete for the cocaine that is available and eventually bid the price up to market equilibrium price.

In essence, when supply and demand curves are fixed, market equilibrium in the drug trade is reached in the same manner as in legal markets. The economic forces and mechanisms produce similar results and it is not unexpected to witness the same kind of changes in the drug market as a consequence of changes in price. The effect on cocaine price or quantity is equally predictive when either supply or demand or both change

Figure 10 Market Surplus

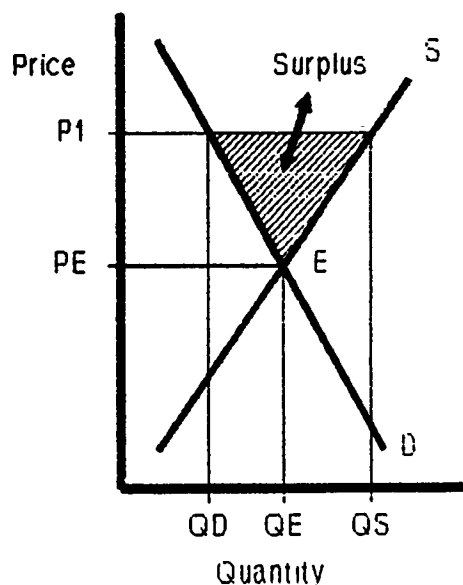
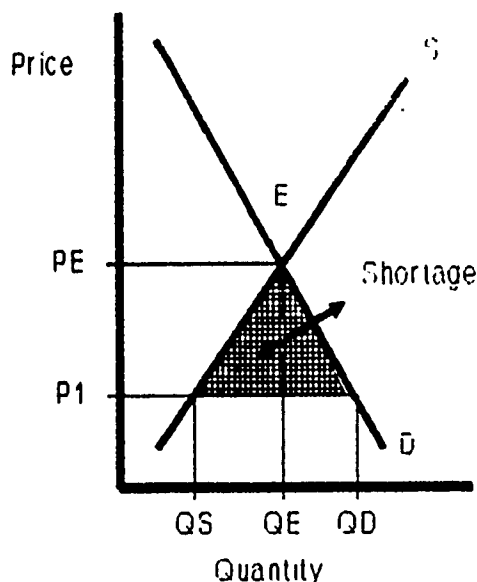


Figure 11 Market Shortage



due to a change in the ceteris paribus variables.

For example, Figure 12 shows the effect on market equilibrium price and quantity as a result of a shift (decrease) in the supply curve because of increased law enforcement or interdiction but no change in the demand schedule. Note that quantity decreases to Q_1 and price increases to P_1 . A decrease in supply with no change in demand will always produce this result and should be kept in mind for later discussions.

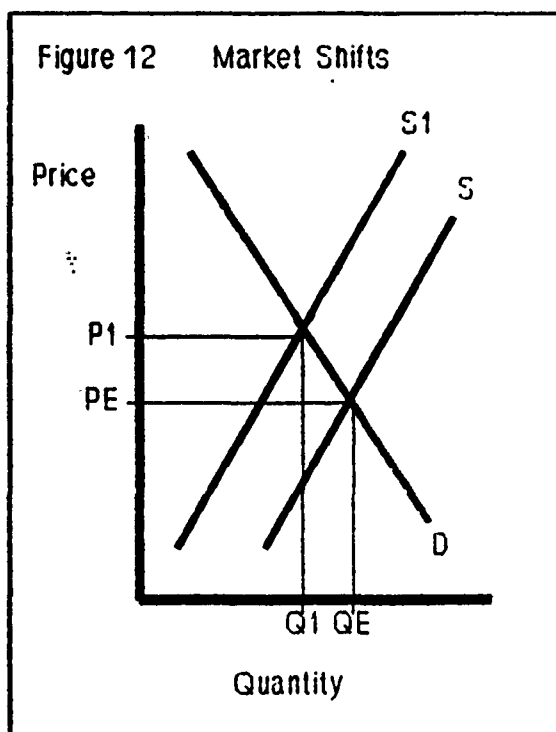
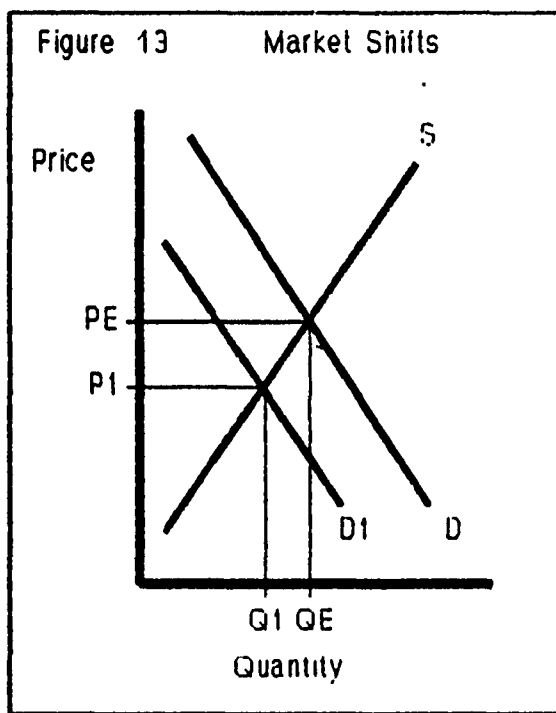
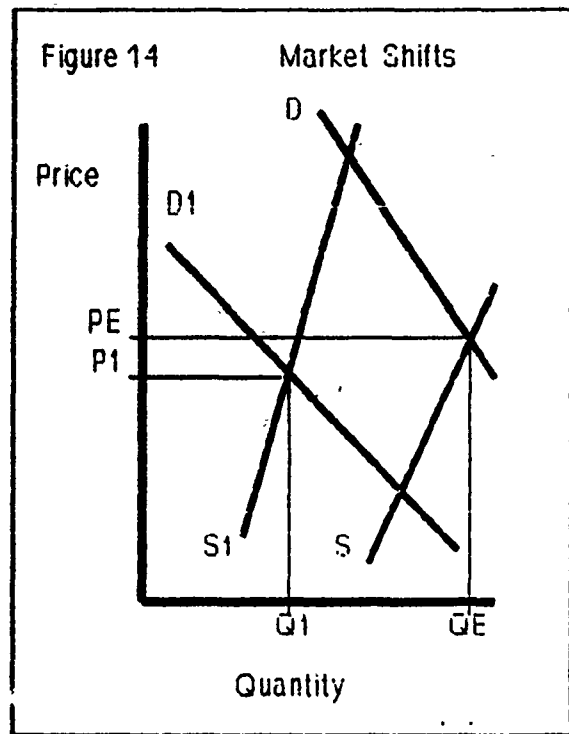


Figure 13 shows the effect on market equilibrium price and quantity as a result of a shift (decrease) in the demand schedule because of risk of incarceration, job, etc., but no change in supply. Note that quantity decreases to Q_1 and the new equilibrium price decreases to P_1 . Here again, this combination of change in demand but no change in supply will always decrease



quantity and price.

Figure 14 shows the effect on market equilibrium price and quantity as a result of a decrease in both supply and demand simultaneously. The equilibrium quantity decreases to Q_1 but the equilibrium price may remain the same, decrease or increase depending upon the magnitude of the changes in the cocaine supply and demand curves. In Figure 14, the new



equilibrium price P_1 decreased, meaning that the magnitude of the decrease in cocaine supply was greater than the decrease in cocaine demand.

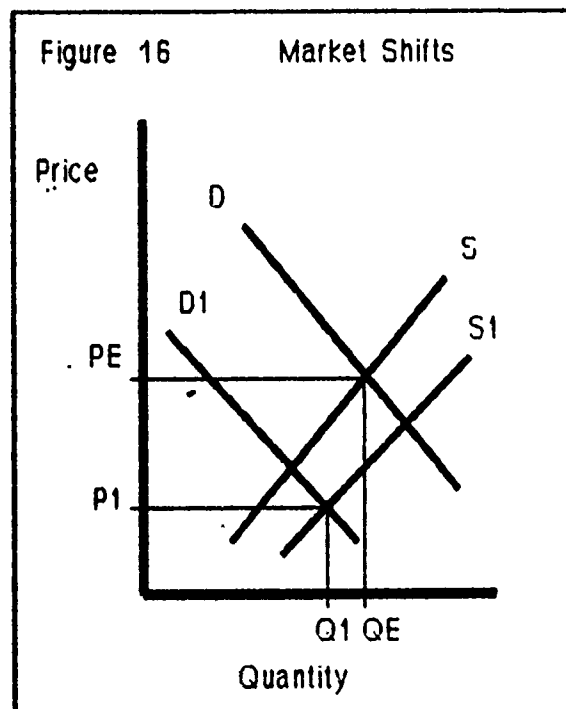
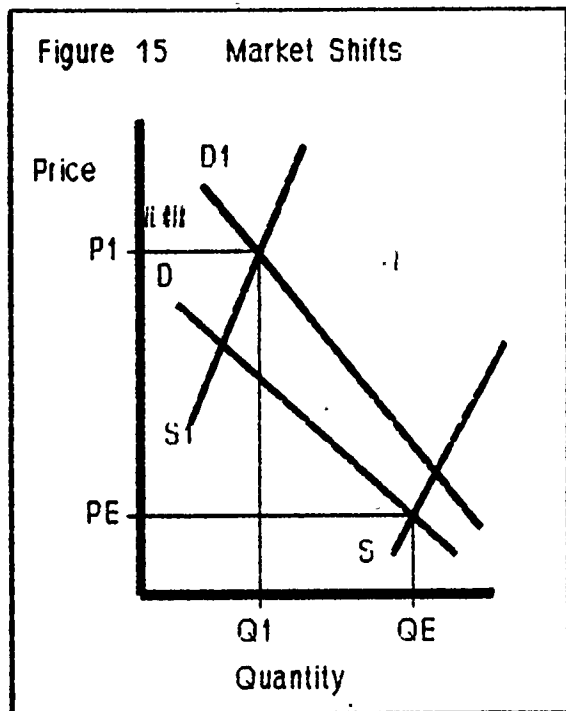
The effect on equilibrium quantity and price when demand or supply increase and the other decreases will also be useful to know for subsequent discussions. Under these conditions the effect on equilibrium price will always be known but the effect on equilibrium quantity will depend on the relative magnitudes of the changes in cocaine supply and demand.

Figure 15 illustrates the effect of an increase in demand coupled with a simultaneous decrease in supply. As demand increases from D to D_1 and supply decreases from S to S_1 , the new equilibrium price increases from P to P_1 and quantity, in

this case, but not always, decreased from Q to Q_1 . Conversely, in Figure 16, if cocaine demand decreases but cocaine supply increases then equilibrium price always decreases, but quantity can stay the same, increase, or decrease depending on the magnitude of the changes in supply and demand. In Figure 16, equilibrium price decreased to P_1 and quantity

decreased to Q_1 meaning that the change in demand was greater than the change in supply.

The next chapter focuses on the changes to the cocaine market over the past decade, some possible factors and reasons for the changes, the cartel's market strategies, and how policy decisions may have shaped the characteristics and behavior of the current cocaine market.



CHAPTER IV

EXPANSION OF COCAINE SUPPLY AND DEMAND

Demand

A thorough understanding of what needs to be done to effectively fight the war on drugs should begin with an understanding of how and why cocaine supply and demand has expanded in the U.S. over the last ten years. This chapter offers some possible explanations why the cocaine market has expanded and where it probably stands today.

First, according to the National Institute on Drug Abuse (NIDA), the number of people between the ages of 17 and 26 willing and able to use cocaine increased dramatically from 1976 to 1979, declined slightly until 1982, increased moderately until 1985, and the number of these users has steadily declined through 1989. People under 17 and over 26 predisposed to cocaine use rose only moderately from 1976 through 1982 and has since steadily declined. NIDA's 1988 national household survey of persons 12 years and older showed a 37 per cent decrease since 1985 in the number of persons who admitted using any kind of illicit drug within the past 30 days. The number of cocaine users in this group dropped from 12 million in 1985 to 8 million in 1988. However, the number of chronic users of cocaine during this same period has steadily increased from 246,000 to 292,000 and their consumption rates have increased. (19:23-45; 20:2694)

From the consumer behavior described, it can be generally concluded that the demand curves for cocaine use can be

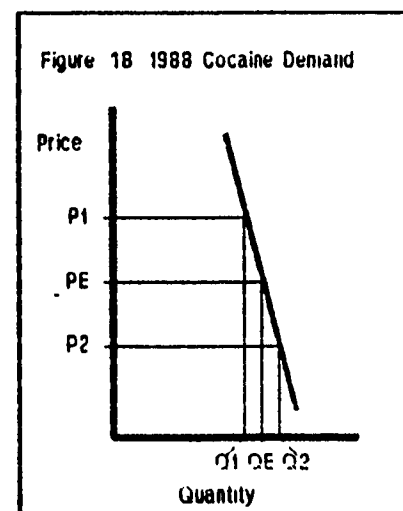
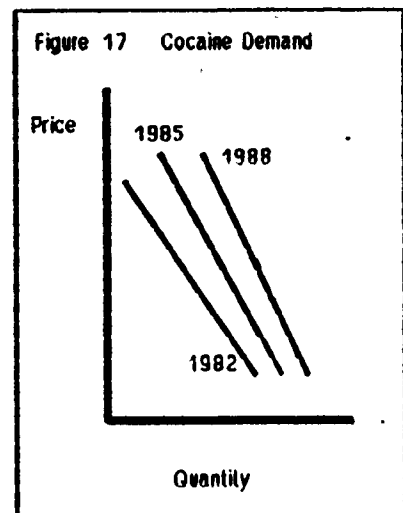
characterized as shown in Figure 17. The 1982 demand curve shifted to the right by 1985, while the 1988 demand curve shifted further right to compensate for the increase in consumption by addictive users. The steeper slope of the 1989 curve suggests that cocaine demand has probably become more inelastic due to the increase in addictive use.

From the forgoing discussion it can be concluded there have been several shifts in the cocaine demand curves since 1982 to the present and that the current demand, as a function of consumer consumption, has steadily increased since 1982 and has become more inelastic. Therefore, as the price of cocaine rises quantity demanded decreases less proportionally, and as price decreases, quantity demanded increases less proportionally as shown in Figure 18.

Note the smaller changes in quantity as price increased from P_E to P_1 and decreased to P_2 . A quantifiable approximation of current consumer demand will be presented in the next chapter.

Supply

The change in supply curves over the last 10 years is more difficult to characterize. However, a reasonable



argument can be made to support the theory that the supply curve has shifted to the right as opposed to an increase in quantity supplied along the same supply curve.

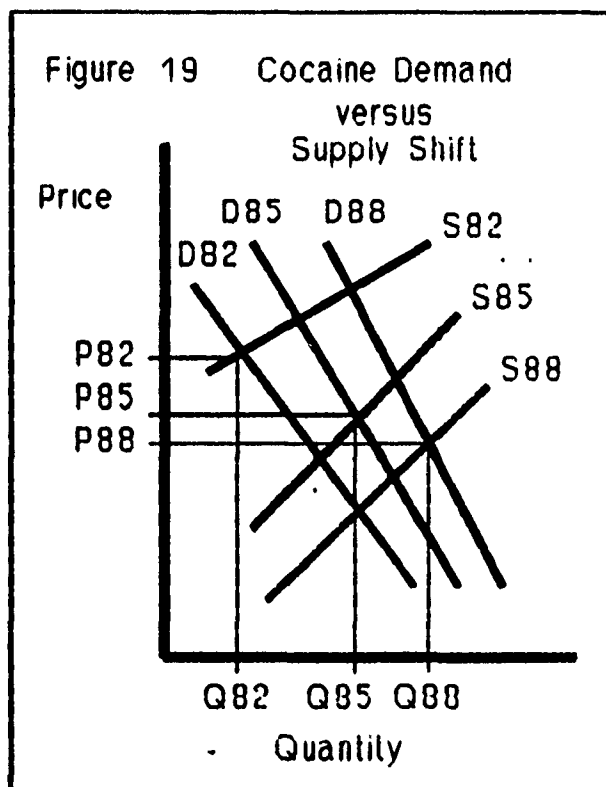
Since 1982, when President Reagan announced his war on drugs, the wholesale price of cocaine has steadily dropped from about \$60,000 per kilo to somewhere between \$10-15,000 per kilo in 1989. (21:81; 22:189) Decreasing wholesale prices came on the heels of equally steady cocaine seizures as a result of increased law enforcement and interdiction. Only 4400 pounds of cocaine were seized enroute to the U.S. in 1981 but an estimated 198,000 pounds were seized in 1988 (23:75).

If seizures, as many experts argue, are only a small percentage of exports, (4 percent in 1981 versus 23 percent in 1985) then this suggests the quantity of cocaine being produced and distributed by the cartel and independents has increased dramatically over the last ten years. (24:64-82; 25:172) Seizure rates, as a percent of exports, were not available for the years 1985 through 1988, but through extrapolation, one could argue that current interdiction rates could be between 30 and 40 percent, which would peg exports between 500,000 to 700,000 pounds of cocaine, of which 300,000 to 500,000 pounds or 136 to 227 metric tons were potentially landed in the U.S. in 1989. In contrast, the Defense Science Board (DSB) estimated that cocaine consumption in 1986 was about 75 metric tons. (26:2)

If interdiction and increased law enforcement are intended to shift the supply curve to the left thereby increasing

equilibrium price and decreasing equilibrium quantity, how is it that just the reverse occurred over time? First, if the character of the cocaine demand curves over time has steadily shifted to the right, then the only possible explanation that would characterize current market conditions (low price, high quantity) suggests that supply has steadily shifted to the right, despite higher rates of interdiction to meet the increase in quantity demanded.

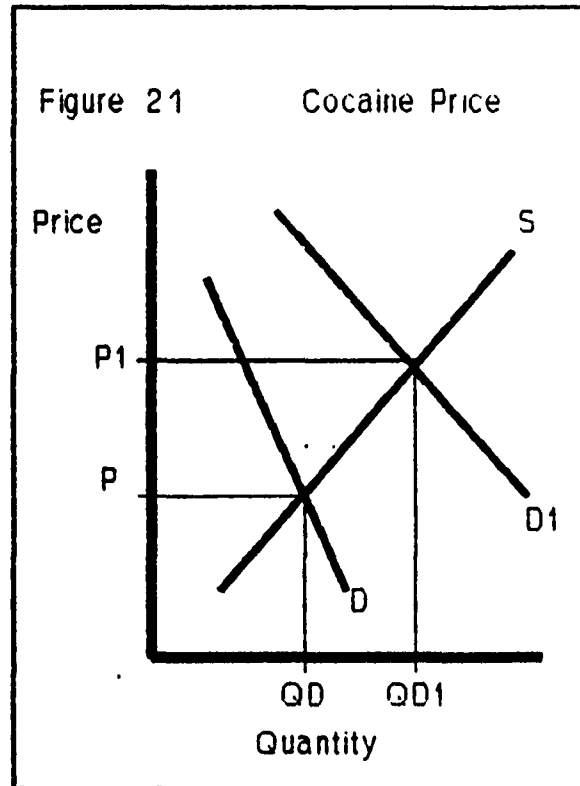
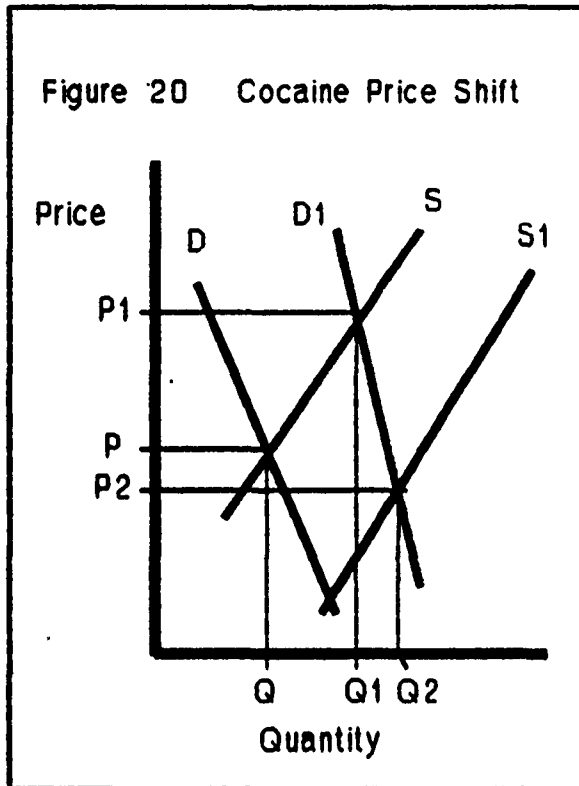
Figure 19 depicts the shift of supply curves over time and the effect on equilibrium quantity and price. The single most important conclusion from the above discussion and analysis is that even though demand shifted to the right (increase), it would require a disproportional increase in supply to decrease price. Increased demand, holding



supply constant or just moderately increasing supply, would produce a higher price as shown in Figure 20. However, the current market price is actually much lower.

As Figure 20 shows, it seems evident that the cartel is supplying more cocaine (S1) to meet quantity demanded, which in

turn, lowers market equilibrium price to P_2 . If the traffickers chose not to increase supply to satisfy increased demand, then price would be higher as shown in Figure 21, but, in the real world, prices have declined and there are strong arguments that there is a glut of cocaine in the market place. (27:39; 28:15)



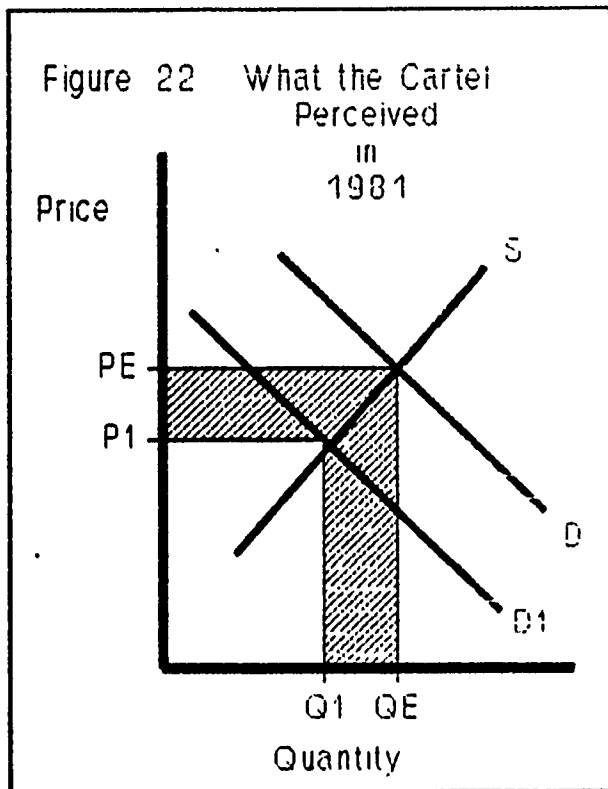
From the previous discussion, it can be argued that the cartel's willingness to produce more and more cocaine has steadily increased despite higher rates of interdiction and seizures. The obvious question at this point is what has increased the willingness of the traffickers to increase supply if this lowers import price and presumably profits? Also, if the trafficker is also facing a steeper demand curve, then any decrease in price is accompanied by only a less proportional

increase in quantity demanded. Is it possible that his total revenues still increased under these conditions? If so, to what degree?

The obvious answer is that revenues must have increased, otherwise there would only be a marginal increase in profits. There are several reasons which support the hypothesis that the traffickers are making more profits from current operations than they did in 1982 despite the drop in wholesale prices.

Cartel Revenues

Suppose that in 1981, when the U.S. announced its war on drugs, the cartel perceived a change in cocaine demand--that is, suppose it feared that U.S. national policies would shift the demand curve to the left (D_1) as shown in Figure 22. Given this scenario, the price of cocaine would drop from PE to P_1 and the equilibrium quantity would drop from QE to Q_1 . Revenues



would decrease by the amount represented by the shaded area shown in Figure 22.

How could the trafficker prevent his total revenues from falling if the perceived threat of decreasing demand were real?

The answer lies in two fundamental strategies, both of which support the thesis that suggests the cartel is more profitable today than in the past.

First, the cartel probably realized that they could not influence the character of the demand curve--that is, there was little in their power to influence consumer attitudes about cocaine use. Still, and this is an important point, they could increase quantity demanded by those predisposed to cocaine use--that is, those people already on the demand schedule, by increasing supply thereby lowering price and increasing quantity.

To implement this market strategy, the cartel knew early on that they would have to control as much of the wholesale and perhaps even the first regional distribution system for cocaine in the U.S. in order to sustain or even increase profitability as the wholesale price of cocaine decreased. Some experts on Colombia contend that the cartel's strategy began in the late 1970's. (29:75) The latest evidence presented by the FBI, DEA and other law enforcement agencies has confirmed that at least 300 Colombian trafficking groups are now operating and controlling a vast wholesaling and regional sales network in the U.S. Each group operates as a self contained cell and information about its operation is tightly compartmentalized and known only to a few high level cartel chieftains. The cartel appoints the manager of each cell who provides strict accountability to the cartel leaders in South America. (27:37-38)

Prior to 1981, the cartel merely landed the cocaine on U.S. shores and collected its import price of 5-6 times its export costs. Now it receives further revenues from the 4-6 times markup between the old wholesale price and first regional sales price. As the cartel makes deeper penetration into the retail sales level their profits become even larger.

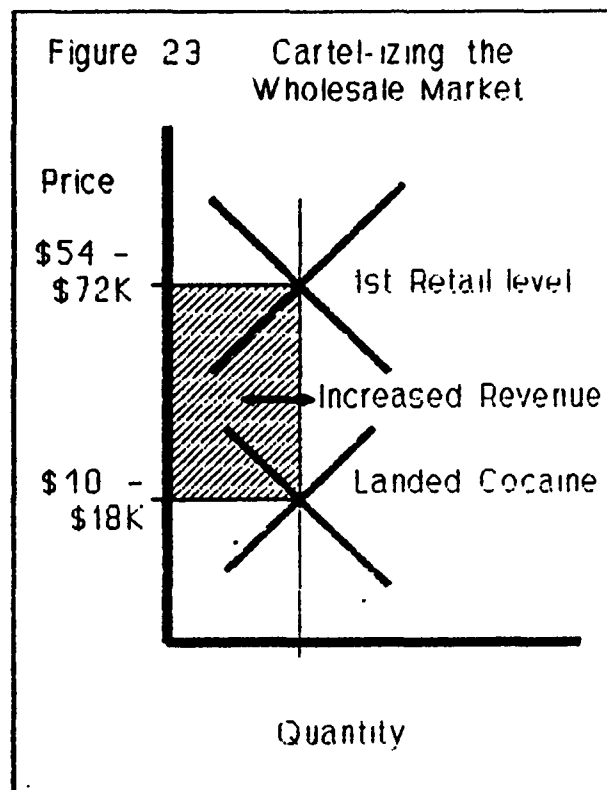
Comparing total revenues for a landed kilo of cocaine in 1981 versus 1989 shows the effect of "cartel-izing" the wholesale market into better perspective. In 1981, the export price of cocaine was estimated at \$10,000 per kilo while import price was \$60,000 per kilo, leaving the trafficker a net revenue of \$50,000 per kilo. (24:80) In 1989, the export price was approximately \$4,000 per kilo, import price was not greater than \$18,000 per kilo, and \$54,000 to \$72,000 at the first retail level assuming a mark-up of 3-4 times wholesale price. This combination left the trafficker with total revenues somewhere between \$50,000 and \$68,000, which is at least equal to or more probably greater, than 1981 revenues on a per kilo basis. However, when you consider that the quantity being supplied in 1989 is greater than 1981, (quantity demanded is greater) then it is easy to accept the hypothesis put forward earlier regarding greater total revenues and profits. Graphically, what the cartel has done is shown in Figure 23. The shaded area notionally represents the cartel's increased revenues as a result of cartel-izing the wholesale network.

The cartel's strategy accomplished another important feature. By controlling the wholesale and first regional markets, the cartel is able to limit the entry of less capable and profitable independent exporters. Whereas in the past, independents could get \$50,000 to \$60,000 for a landed kilo, they now have to settle for \$10,000 to \$15,000

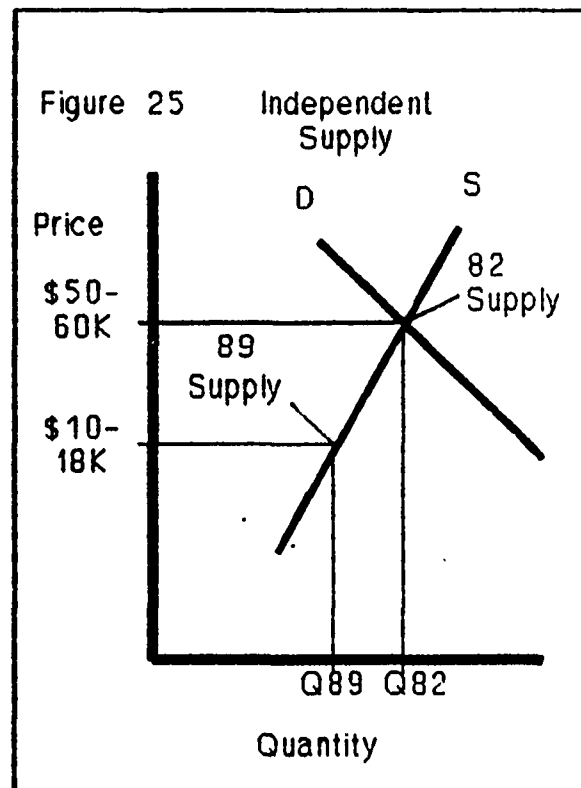
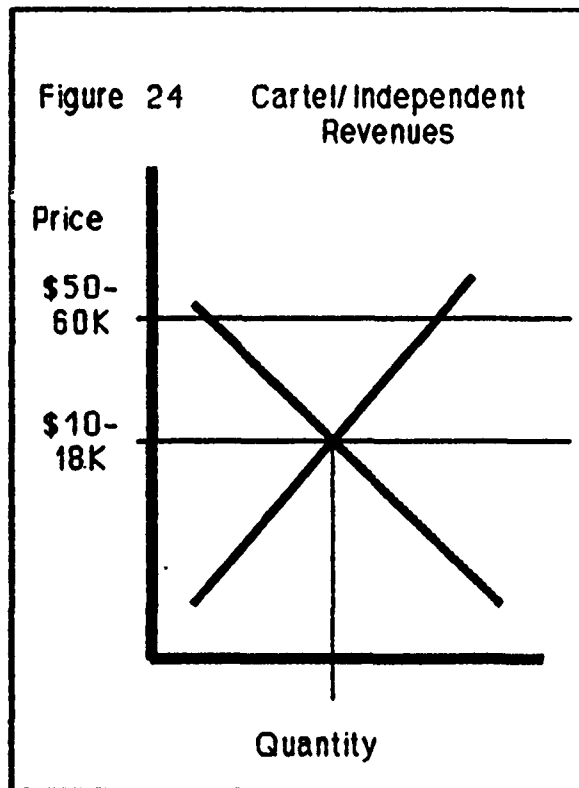
per kilo but do not share any of the first level retail profits.

As interdiction of independents' exports increases, profitability decreases, and they are less motivated to produce cocaine, thereby garnering the cartels an even greater share of the market. In effect, the cartel has created an artificially low import price on its product, but a very real price that independents will receive if they land their cocaine. Figures 24 and 25 show the effect on the quantity independents are willing to supply under the imposition of the lower import price. In 1982, independent traffickers provided quantity Q82 but today, they are only willing to provide quantity Q89.

The lower import price effectively decreases the quantity willing to be provided by the independents. At this quantity the



cartel will allow independents to produce without resorting to violence for market control. In some respects, this strategy resembles the techniques used by dominate firms in legal markets to control entry of non-dominant firms.



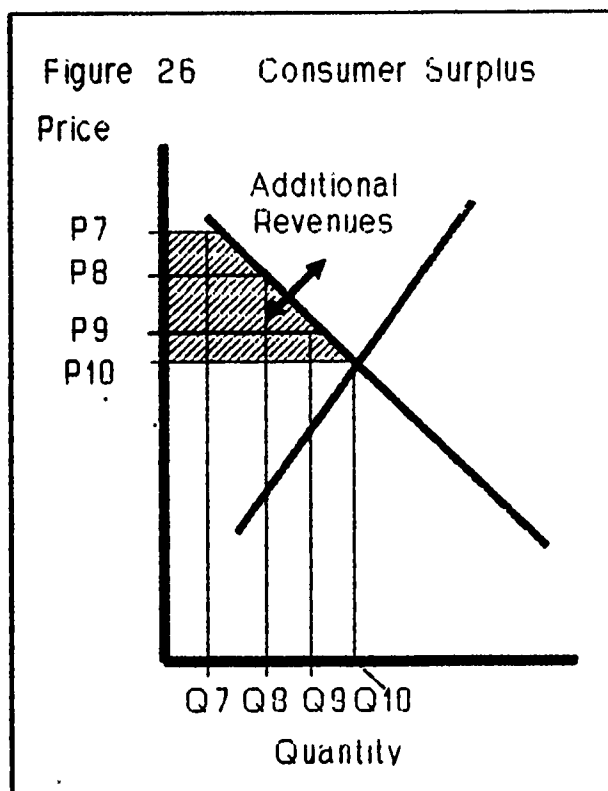
There is one other technique that the cartel may have employed, after controlling the wholesale and first regional sale markets, to increase total revenues and profits. Several sources suggest that the price of cocaine varies from region to region within the U.S. For example, it is possible to buy a kilo of cocaine in New York City for almost one-half to one third the price in Washington, D.C. (11:262) Price discrimination is even greater when compared to the European market. A kilo of cocaine shipped to Spain yields nearly four times the price in

Miami. In London, the street value of cocaine is three times the price in New York. (30:23) In addition, it is also reported that cocaine, if bought in different amounts, also affects the transaction price. (10:144) If true, then it is possible that the cartel may also be practicing price discrimination by capturing what is known as "consumer surplus".

Consumer surplus is the buyer's demand price and the price actually paid and is graphically depicted in Figure 26. For example, suppose the buyer was willing to pay price P10 for the 10th unit of cocaine (kilos), but for units 1 through 9 he would have paid a higher price, then the lightly shaded area represents consumer surplus--what he was willing to pay for cocaine,

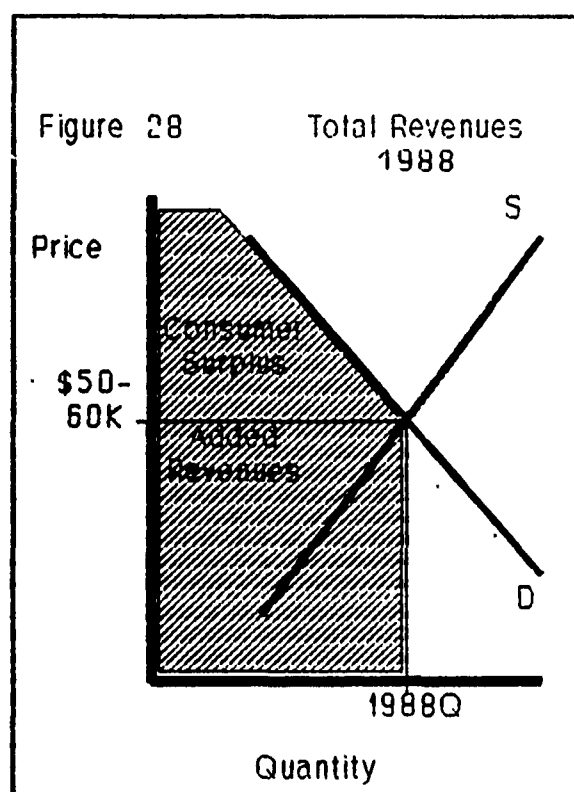
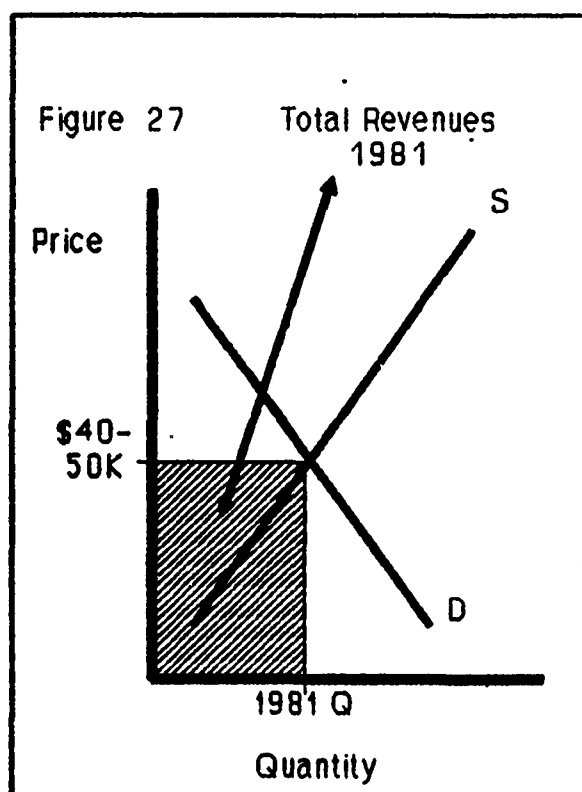
but didn't have to if it were bought in a competitive market. In a competitive market the cartel's total revenues would be limited to the area bounded by P10 X Q10.

The cartel, using monopolistic pricing techniques would seek to get the maximum the buyer would have paid for each unit bought by setting a price which captures consumer surplus as shown in Figure 26. Note the increase in total revenues from this pricing



approach versus what a competitive firm could get in the market.

In conclusion, the cartel appears to have completely restructured their distribution system to increase profitability and thwart higher costs imposed by law enforcement and drug interdiction. The cumulative effect of their strategy in terms of total revenues can best be described by examining Figures 27 and 28.



In 1980 and prior years, the cartel's total revenues were limited to what they could get for cocaine landed in the U.S. as shown in Figure 27. Today, the cartel's total revenue potential is as shown in Figure 28 and this represents the truer character of the cartel's immense profit making capability and why they have the staying power to continue production and distribution

of cocaine despite increased costs of interdiction and law enforcement. To put it into even better perspective, several government agencies have stated that the cartel's revenues are over 10 times what was earned by other organized crime in trafficking heroin. (27:41)

Without a doubt, the cartel's center of gravity in the U.S. distribution system lies in its apparent hold on the wholesale and at least the first retail sales level. Government policy to break up this system should be top priority in the law enforcement part of the national drug budget. Yet, funds for the Organized Crime Drug Enforcement Task Force (OCDEFT) program, targeted at high-level traffickers, amounted to only \$196 million in 1989 and \$215 million in 1990 --about two percent of the total drug budget. (23:120) It would appear that more investment in this area is needed because results here can lead to a substantial difference in the cartel's ability to sustain their profit-maximizing posture in the long run.

Severing their access to the retail chain deprives them of additional revenues and should reduce their willingness to supply cocaine at current market prices. In effect, denying them the extra profits from wholesaling and retail distribution puts them in the same position they had in the early 1980's and compared to the administration's goals set forth in the 1989 National Drug Strategy, this would be a significant accomplishment. (23:93-97)

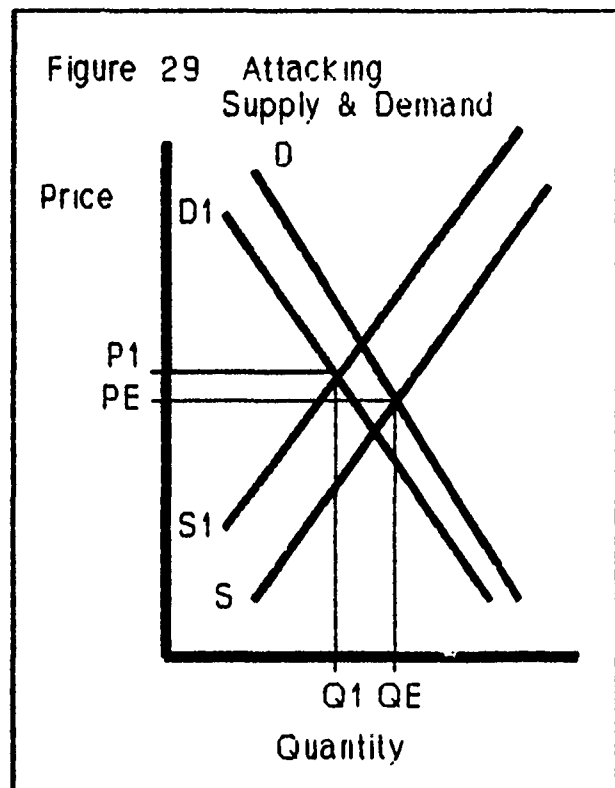
CHAPTER V

BROAD U.S. DRUG POLICY OBJECTIVES

The current U.S. administration's strategy to combat the drug problem attacks both supply and demand to achieve three fundamental goals: 1) increase the price of illicit drugs; 2) depress overall demand; and 3) restrict availability. (23:11)

This chapter focuses on the effects of the resources that the federal government has allocated to various agencies to achieve the three policy goals.

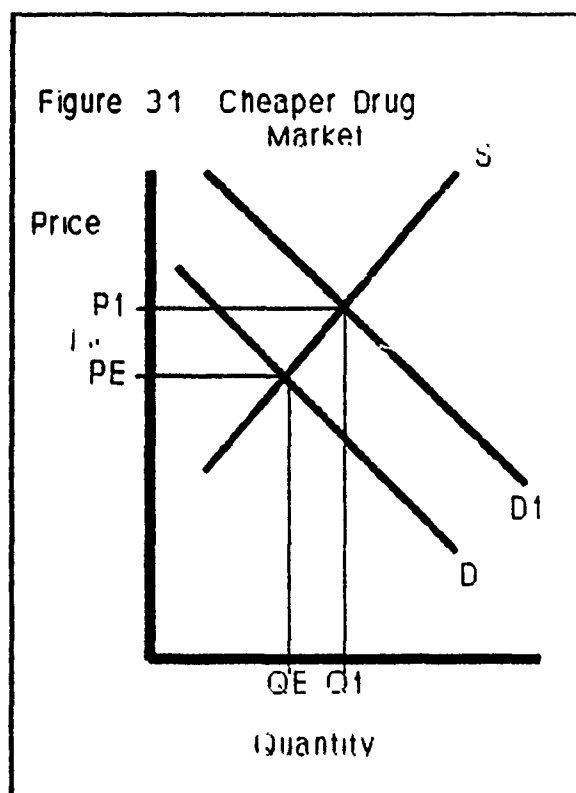
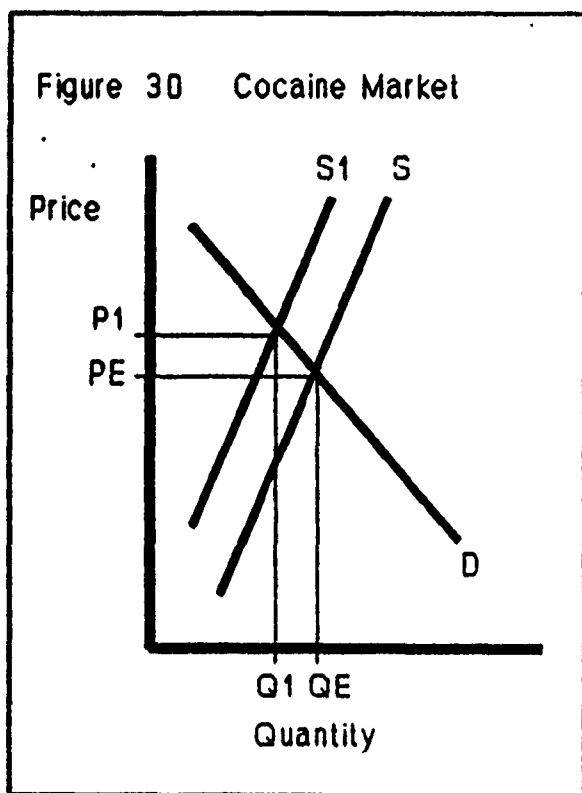
From an overall perspective, the government's approach to attacking both supply and demand should, at least in theory, achieve the stated objectives. First, attacking supply through interdiction and domestic seizures, as shown in Figure 29, are intended to shift the supply curve to the left (S_1) thereby reducing supply, increasing price, and



decreasing quantity. Concurrently reducing demand, although less proportionately (D_1), further reduces quantity. The combination of the two effects should eventually decrease quantity to Q_1 and increase the equilibrium price to P_1 thereby

affecting the consumption patterns or both the chronic and casual user of cocaine.

Many have argued that attacking only one or the other produces far better effects than a combination of both supply and demand. (31:27) However, it is important to emphasize that attacking supply or demand alone does not fulfill all of the administration's goals in the long run. For example, if government chose to attack only supply which decreases quantity demanded, then higher prices produce two effects which run counter to the overall objectives of reducing drug use.



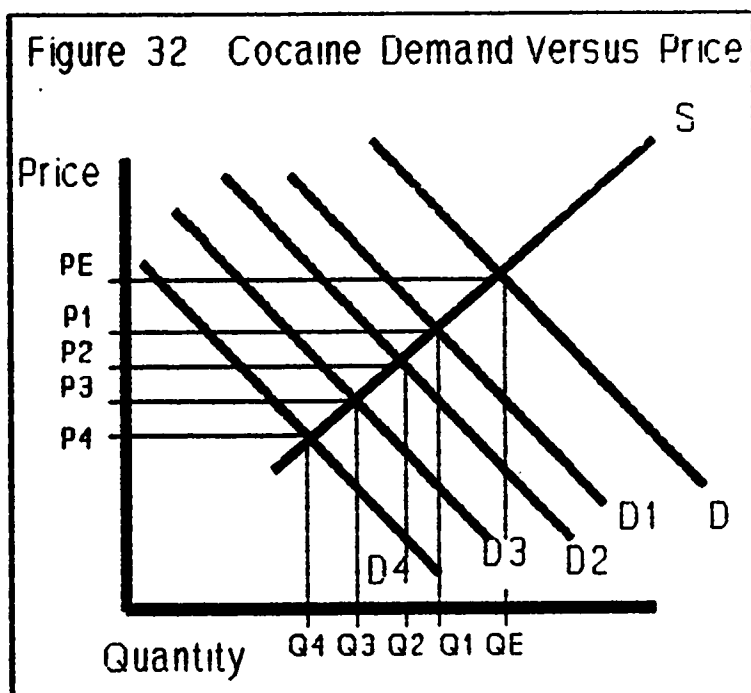
First, those persons still predisposed to drug use but unable to afford cocaine at the higher price will seek a cheaper substitute drug. The graph in Figure 30 represents the cocaine

market in equilibrium and the graph in Figure 31 represents the cheaper drug market in equilibrium. Any decrease in cocaine supply, S_1 , would decrease quantity demanded for cocaine but would increase demand for the cheaper drug, D_1 , as well as quantity supplied and price. The net effect is that demand for overall drug use would remain the same and the government's policy merely changed consumers' preferences toward a specific cheaper substitute drug. Demand therefore, must be attacked simultaneously with supply to achieve the administration's long term objectives of reducing overall drug use.

Reducing only supply, thereby decreasing quantity demanded (but not demand) also creates competition among street dealers for those consumers still willing to purchase cocaine at the higher price. Unfortunately, competition comes in the form of violent turf battles culminating in death or injuries to both dealers, users and innocent bystanders. (32:25-26) Clearly then, attacking only supply should not be the sole answer to meet the government's goals. Conversely, attacking only demand, as many suggest, is also contrary to the administration's objectives.

Decreasing only demand through both law enforcement and non-punitive measures to change the behavior of those predisposed to cocaine use theoretically shifts the entire demand curve to the left. However, in the absence of a shift in supply, attacking only demand runs contrary to the administration's goal of increasing the cost of cocaine.

Figure 32 shows the cumulative effect of decreasing demand while holding supply constant. As quantity decreases from Q_E to Q₄ price decreases to P₄ and in the long run, the lower price could induce people currently using a cheaper drug to switch to cocaine.



Unfortunately, the administration's attack on both supply and demand has not produced the desired effects necessary to achieve the three policy objectives. Supply, despite interdiction and law enforcement efforts which garner 70 per cent of the federal drug budget, has significantly increased over the past few years. (33:22) A reasonable hypothesis of why and to what degree was presented in chapter 4 of this analysis. Overall demand, despite the encouraging news from NIDA regarding a reduction in the number of casual users, has also steadily increased.

However, if the mechanisms being employed are theoretically expected to produce the desired results, then why has the strategy failed? There are several possible explanations. First, administration mechanisms might be ineffectively applied

across the broad range of components in the supply and demand arena. Secondly, the drug market may have some hidden attributes which does not allow it to respond to the mechanisms currently being employed. A closer examination of the real character of cocaine demand might reveal which market mechanisms influence consumer behavior effectively and efficiently to achieve policy objectives.

Casual Versus Addictive Use of Cocaine

As mentioned earlier, NIDA's survey concluded that there were 8 million casual users (used cocaine at least once in the last month) in 1988 versus 12 million in 1985, but chronic users (used cocaine daily) rose from 246,000 in 1985 to 292,000 in 1988. Between June, 1988 and June, 1989, NIDA reported that some cities' hard-core emergency cocaine cases have increased by as much as 153 per cent while casual cases continued to decline. (34:1) This would suggest that the trend mentioned earlier continues. However, to suggest that cocaine use has been cut in half since 1985, as Secretary of State Baker pointed out in an address to the United Nations in 1989, is misleading. (35:2)

For the sake of analysis, if it is assumed that casual users consumed an average of two vials of crack per month and chronic users consumed up to eight vials of crack per day, then over the course of a year, 192,000,000 vials of crack would be consumed by casual users, while chronic users would consume about 876,000,000 vials. The total vials consumed by both would be 1,068,000,000 vials annually. Using the Defense Science Board's estimate that

one metric ton of cocaine equals 8,666,666 vials of crack, then the total quantity of cocaine consumed by casual and chronic users in 1988 was approximately 123 metric tons. (26:36)

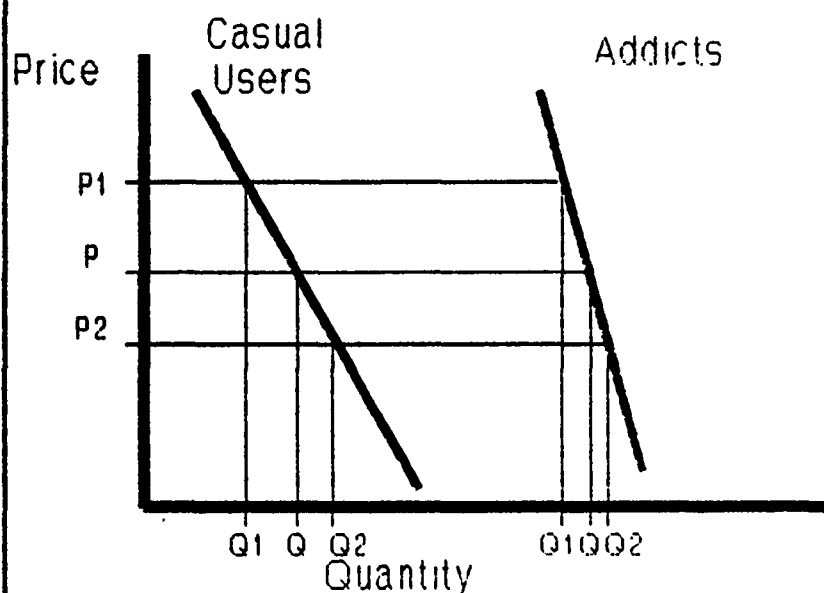
The theoretical consumption derived here closely correlates to the theoretic quantity landed based on an interdiction rate of 40 percent of exports---136 metric tons of cocaine. The surplus, perhaps, is probably much higher given that huge seizures such as the one in Sylmar, California (20 tons) produced no change in the street price of cocaine. (27:39) This would suggest that the actual interdiction rate is less than 40 percent-- perhaps somewhere between 30-35 percent and therefore supply in the U.S. is far greater than demand.

The significance of this observation points out several key factors which should help define better operational strategies to achieve overall policy objectives regarding demand. First, casual users account for only 18 per cent of total consumption of cocaine and their numbers appear to be declining. Addicts consume the remaining 82 percent. Furthermore, if the demand by addicts is more inelastic than demand of the casual user, then what is the appropriate strategy to produce the greatest reduction in the consumption of cocaine--decreasing demand or decreasing supply? The possible answer again lies in analyzing the effects of various policy options on each user's demand schedule.

For comparative purposes Figure 33 shows the demand curves for both casual and addictive users. At price P casual and addictive users consume Q units of cocaine.

If interdiction increases P to P_1 then the rate of quantity demanded by casual users is proportionally higher than for addictive users. Conversely, if price decreases to P_2 then the rate of quantity demanded by casual

Figure 33 Casual Versus Addict Use



users increases proportionally higher than for addicts.

From this simple analysis it can readily be seen that price changes only marginally affect the addicts' consumption pattern in contrast to casual users whose consumption varies more directly with price. This behavior poses an interesting question regarding policy objectives toward reducing supply.

If interdiction and seizures are intended to shift the supply curve to the left (decrease supply) and if, for the moment, casual and addict user demand are held constant, then interdiction only marginally affects the addict's quantity demanded, but causes a greater change in quantity demanded by casual users. But, since addicts consume 82 per cent of quantity supplied, then interdiction of supply would not appear to

considerably depress overall demand as desired by the administration.

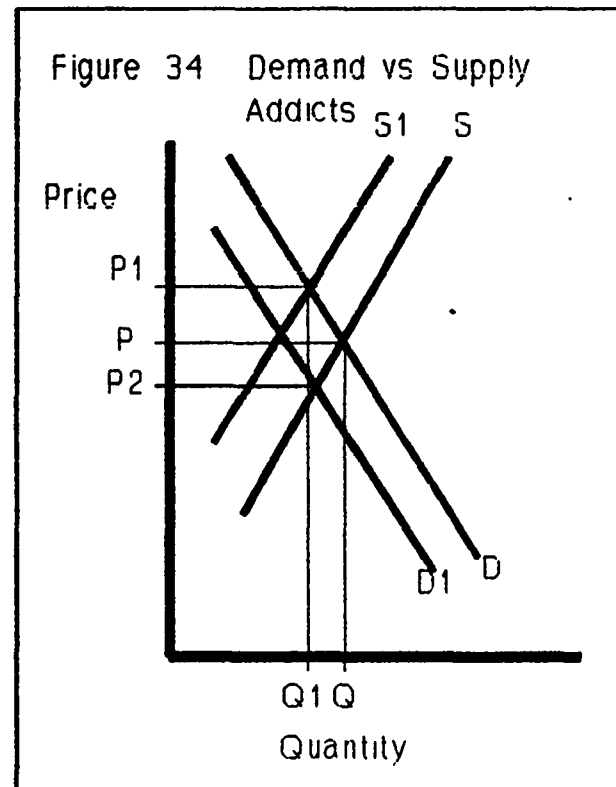
Yet, over 70 per cent of the administration's 1990 and proposed 1991 budgets targets, directly or indirectly, the behavior of the casual user or one who might be predisposed to drug use and has only a marginal effect on addicts. In fact, the 1990 budget only allocates \$685 million dollars out of a total budget of \$9.5 billion, for treatment of addicts, while the proposed 1991 budget provides a nominal increase to \$840 million out of \$10.5 billion. (23:116) In essence, the national budget allocates less than ten per cent of the total drug war budget to decrease 82 per cent of the consumption by the real menace--the addict. Reducing supply yields higher price and therefore certainly affects the behavior of the casual user, but only marginally affects the consumption of the addict!

Some politicians, like Senator Biden (D-Del), and Rep. Rangel (D-NY) echo the same conclusion and have charged that the administration was placing too much emphasis on casual users and not enough on "hard-core addicts." (36:1;34:1) Even the outgoing head of the DEA, John Lawn, would like to see more money going into prevention and treatment. (37:9A)

The obvious question drawn from this discussion is to what degree should the administration provide funds to the states to decrease addict demand--not quantity demanded. On a dollar-for-dollar basis would this strategy be more or less effective than allocating the same funds for reducing quantity demanded through

interdiction and seizures?

The answer is only partially available from examining the drug market model. Figure 34 shows the now familiar drug market in equilibrium at price P , only this time the demand curve represents addict demand. If the administration's overall objective is to reduce quantity effectively and efficiently, then it is necessary to compare the cost



of interdicting supply to achieve a shift in the supply curve to S_1 versus the cost of decreasing addict demand from D to D_1 . The quantity demanded decreases to Q_1 for either approach, but price is different (P_1 versus P_2). However, since raising the price of cocaine is also a policy objective, it could be argued that strategies to decrease supply should outweigh strategies to decrease demand. But which strategy produces the long run objective more efficiently, effectively, and at the least cost to society?

Therein lies one of the great problems of the war on drugs-- it becomes very subjective as to which mechanism produces the better results in the long run. Some suggest that the Americans'

desire for a quick fix to the drug problem coupled with a lack of analysis of what works or why precludes the development of sound policy decisions. (38:21;39:1607) Consequently, the administration's strategy attacks all fronts, with a disproportionate amount on supply and with the hope that something in the aggregate produces the desired objectives. Success or failure, the critics argue, will never be understood to guide future strategies against the next epidemic. (39:1605-1607)

What can be said with certainty, is that up to now the emphasis on interdiction has not shifted supply to the left. (40:1) As a result, the cost of interdiction has contributed very little towards either reducing quantity demanded or demand with the exception of some limited success of reducing casual consumption through presumably tougher law enforcement and non-punitive measures. Perhaps it is time to shift overall national strategy by significantly increasing funds for treating drug addicts or develop some other means to control their insatiable appetite for cocaine.

As noted earlier, the drug war must be fought on both the supply and demand side of the market equation. Aside from the standpoint that interdiction has had virtually no positive effect on reducing demand or quantity demanded some have argued that it has it has no doubt made it costlier for the cartel to export cocaine and without interdiction, the surplus of cocaine in the U.S. would be even greater. (41:1) Furthermore, the

administration claims that interdiction, at least symbolically, shows resolve to other countries that the U.S. is serious about combating drug trafficking. (23:74) The issue remains is whether interdiction could be accomplished more efficiently and perhaps with less resources while still maintaining a symbol of national resolve.

General Interdiction Considerations

Over the past ten years interdiction rates have steadily risen but still have not reached a rate which changes the trafficker's willingness to supply cocaine. But are the resources currently being expended to reduce supply being effectively used to achieve the greatest benefit? Further, what is a quantifiable measure of merit? For example, if current interdiction and seizure rates are between 30 and 40 per cent as suggested earlier in this report, then what new target rate will change the cartel's willingness to supply? Can it be achieved without significantly increasing resources and what effect will it have on the overall drug market? Some Congressman, like Representative Jack Davis (R-IL) believe the military can significantly increase its involvement at no additional costs by simply squeezing it into the military training budget. (42:13)

As discussed in chapter four, it has been postulated that under the current cartel distribution system, the cartel's total revenue from a landed kilo of cocaine is 15 times greater than export costs. Given this margin, a 50 per cent rate of interdiction/seizure still nets the cartel total revenues equal

to what they got in 1980 when the borders were virtually open. At 90 per cent interdiction, the cartel's total revenues equal total costs. Anywhere in between 50-90 percent they earn economic profits but marginally less than under current conditions. Within this range, it is difficult to estimate what the street price of cocaine would be, but presumably it would be higher unless all retailers in the distribution chain accepted lower profits, which is highly unlikely.

The administration has not set any quantifiable goals on either interdiction or seizure rates, nor, on an expected street price for cocaine except to say a "significant reduction" and "higher price". (23:95-98) From a purely speculative point of view it would appear that interdiction rates higher than 50 per cent should begin to decrease the cartel's profitability and presumably reduce its willingness to expand supply. The question is, can the administration afford the resources to attain this rate without undermining other initiatives to reduce demand?

Is it possible that better operational strategies can master supply reduction without increasing the costs? For example, are there targets in the production and distribution chain which qualify as choke points or the smuggler's center of gravity? In short, is there a better way for both the U.S. and foreign governments to achieve the desired results without risking civic turmoil or governmental collapse as was almost the case in Bolivia following Operation Blast Furnace? (43:104-111)

The next chapter examines the cocaine production and

distribution system outside U.S. borders and assesses the effect different operational strategies have on interdicting cocaine: crop eradication and substitution; interdiction of chemical precursors to produce cocaine paste, base, or cocaine hydrochloride (HCL); destruction of cocaine paste, base, and cocaine HCL processing facilities; maritime interdiction in the Caribbean basin; air interdiction over source countries and transshipment routes to U.S. borders; and land interdiction along U.S. borders.

CHAPTER VI

ANALYSIS OF INTERDICTION STRATEGIES

General

Fundamentally, the administration's strategy to interdict drugs outside U.S. borders has two elements: motivating governments of cocaine producing countries to significantly damage the cocaine industry within their borders; and, interdicting cocaine hydrochloride enroute to or at U.S. borders. (23:63) Damaging the cocaine industry within cocaine-producing countries relies heavily on law enforcement and military resources of the producing country with minimal involvement by U.S. personnel. In contrast, interdiction along transshipment routes to the U.S. and along U.S. borders is almost the exclusive domain of U.S. law enforcement and DOD personnel with the exception of a few countries like Mexico, Canada, and the Bahamas where local police and militia interdict illegal drugs within their territorial sovereignty.

In recent years, the administration has expanded the scope of the interdiction mission along transshipment routes to the U.S. and the Department of Defense has been given a greater role and budget in coordinating and directing this effort. (23:119) A recent Department of Defense Guidance issued by Secretary of Defense Cheney in September, 1989, directs the military departments to reduce the flow of drugs into the U.S., but the details of the implementing plan are, as of the writing of this analysis, still being formulated. (44:1-4) However, it appears

that the thrust of U.S. military involvement in the war on drugs will be increased detection and monitoring of aerial and seaborne narcotics shipments, some of which is intended to be accomplished by U.S. Naval vessels close to the shores of producing countries.

(45:3) But, the proposed plans have been put on hold as a result of a post-Panama policy backlash by some South American Countries. (46:6) Direct U.S. military involvement in producing countries is expected to remain minimal partly because prior direct intervention, such as Operation Blast Furnace in Bolivia, could not be sustained. (13:106; 47:7; 48:50)

Operation Blast Furnace involved the deployment of 170 U.S. military personnel and six UH-60 Blackhawk helicopters to the Chapre region of Bolivia for a four month period in 1986 to support raids against suspected cocaine laboratories. The operation put a temporary decline in production of cocaine, but failed to net any significant suspects or supplies of cocaine. Furthermore, U.S. presence had a de-stabilizing effect on the leadership of the Bolivian government. (49:8)

Despite the lack of success with Operation Blast Furnace, there are still some senior military officers, like retired Army Chief of Staff, General Edward C. Meyer, who believe commando raids, presumably lead by American forces, are exactly what combat units are trained for and would significantly reduce the flow of drugs into the U.S. within one year. (50:20; 51:2) Other senior officers like General Alfred M Gray Jr., Commandant of the Marines, warn that "those that want to invade with

battalions better damn sure be ready for body bags returning home." (52:1)

While roles and missions of various agencies in interdicting drugs have changed over the years, the essence of the administration's strategy at the strategic level remains unchanged -- train and assist foreign agencies in destroying cocaine production within their countries while providing a more direct U.S. military and law enforcement role in interdicting cocaine once in the transshipment pipeline. As of October 1989, there were approximately 100 civilians (DEA agents), plus some 50 U.S. Green Beret training officers participating in Operation Snowcap in Bolivia and Peru. Operation Snowcap involves a training program for host-nation forces in counter-insurgency and small-unit tactics. Similar efforts are also underway in other countries. (49:8) But, the bulk of U.S. military and law enforcement agency activities are outside of the borders of producing countries. Still, it is interesting to note that the drug summit in Cartagena, Colombia, did not refer to the general principle of armed forces of one country operating in another country. (53:1)

The U.S. resources being used within and outside providing countries may, in fact, be disproportional or even counter productive to what the administration hopes to achieve from the investment. For example, is it possible that interdiction can lead to even greater production of cocaine? Does eradication of coca leaf crops induce farmers to grow more coca crop? What are

other possible short and long term effects and consequences of different interdiction strategies? Finally, how does demand for cocaine in the U.S. and other parts of the world affect the outcome of these strategies? The remainder of this chapter provides a more detailed analysis of some possible effects of past and potential operational strategies to interdict cocaine.

Interdiction in Producing Countries

The Colombian cartel produces nearly 75 per cent of all Andean manufactured cocaine hydrochloride. Its chemical processing plants could be militarily described as prime "choke points" --that is, the plant brings together all the necessary resources to manufacture cocaine hydrochloride and the concentration of those resources in one place represents a prized and very leveraged target.

While cocaine plant size varies, the Defense Science Board suggests that a typical plant has the capacity to produce 500 kilos of cocaine hydrochloride per week, using about 50 laborers, one chemist, 1,200 -1,300 kilos of cocaine paste (manufactured from 20,000 kilos of leaves), 5,000 liters of ether and acetone, five metric tons of potassium permanganate and at least 10,000 gallons of water. The plant also requires electricity, a communication network to facilitate replenishment of consumables, and presumably access to a waterway or airstrip to transport supplies and processed cocaine. (26:36)

No one really knows how many such plants exist and the Defense Science Board suggests that many could be smaller or

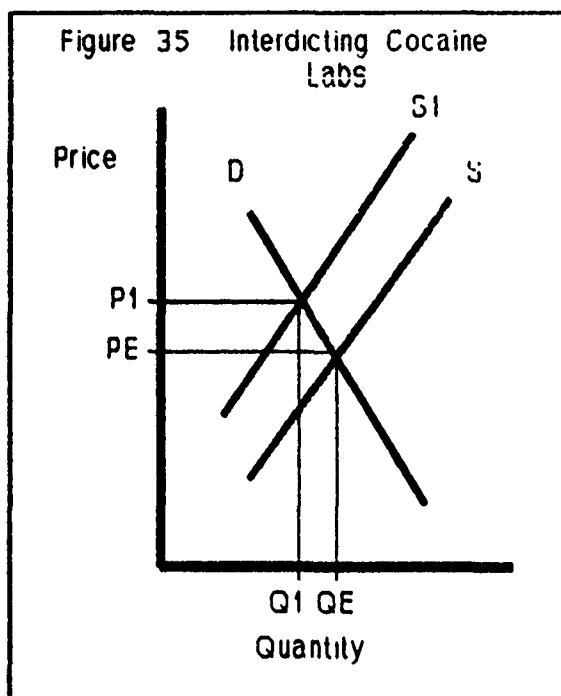
larger than the typical plant. However, if the entire known coca leaf crop were converted to cocaine hydrochloride, then as much as 600 metric tons could be produced by only 24 typical plants in one year. Most recent DEA estimates suggest the cartel's production capacity ranges from 350 to 600 tons of cocaine. (54:17) Even if plant sizes were one-half to one-fourth the size of the typical plant, the most that would be needed to produce the maximum output would be between 50 - 100 plants. The target set is therefore much smaller than say coca leaves (400,000 - 500,000 acres) or paste processing plants which are closer to the farms and number in the thousands.

It would seem logical to conclude that if resources to interdict on all fronts are scarce, then the best and most highly leveraged target sets are the cocaine hydrochloride plants. Subordinating assets which contribute to the destruction of cocaine hydrochloride plants to other missions, such as crop eradication, or even interdiction of relatively small amounts of processed cocaine hydrochloride within the source country, would not appear to be as cost effective as discovering and destroying a plant and its supplies capable of producing 500 kilos of cocaine per week.

Yet, the resources at Colombia's disposal to find and destroy cocaine processing plants are grossly inadequate. For example, Colombian police have a total of 22 helicopters, seven of which arrived from the U.S. in September 1989, to strike a suspected plant once its location has been determined. (55:18;

56:30) In addition, the Colombian government lacks equipment to jam or eavesdrop on radio frequencies controlled by traffickers and open literature suggests they do not have the organic capability to conduct any kind of aerial reconnaissance, electronic intelligence, geographic surveillance for precursor chemical wastes, or other technical intelligence gathering means to identify locations of possible plant sites. (57:32)

Given Colombia's land area, finding the location of relocatable plants in an area of 440,000 square miles, could prove difficult, but potential sites could be narrowed down with appropriate intelligence gathering means provided by U.S. Department of Defense sources. But, the information provided would have to meet certain

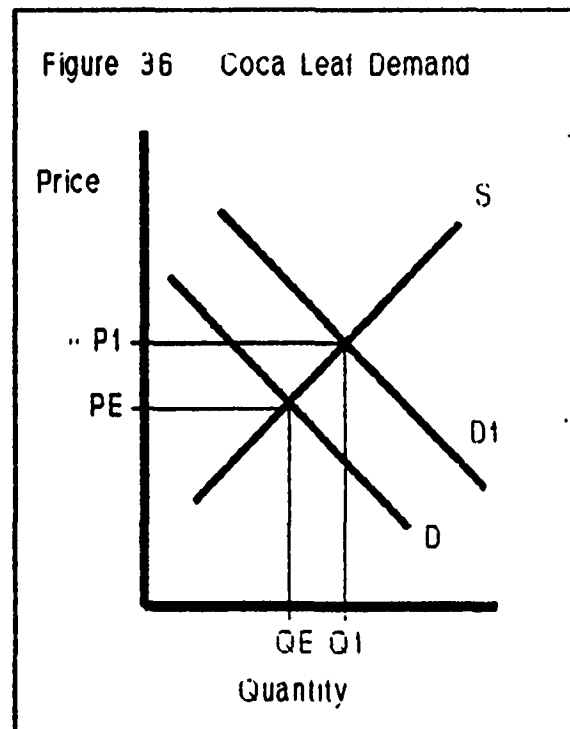


conditions of due process because it would ultimately have to be revealed in court as evidence for a prosecution. (58:52) But, desensitized intelligence data could be passed on to Colombian military and police units to interdict the suspected targets thereby minimizing use of U.S. personnel. Given reasonable success in locating and destroying processing labs should, at least in the short run, decrease the supply of cocaine hydrochloride as shown in Figure 35. Quantity is reduced to Q_1

and price increases to P_1 thereby moving in the direction sought by the administration.

From a military strategy perspective, this approach makes sense because it minimizes use of both U.S. and Colombian personnel while maximizing their output. But, what happens in the other areas of the drug market as a result of this seemingly effective military strategy?

First, if demand for cocaine hydrochloride, in the long run remains unchanged--that is, the number of people predisposed to use is the same--then the cartel is still motivated to produce cocaine hydrochloride. The only difference now is that its operation requires more production factors (paste, chemical precursors) to compensate for expected losses



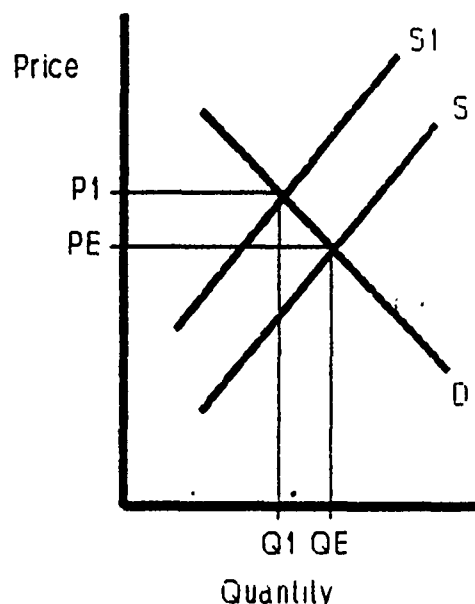
as a result of lab interdiction. This in turn increases the demand for coca leaf and chemical precursors in the long run. As a result of increased coca leaf demand and price, farmers are induced to substitute even more legal crops for coca leaves as shown in Figure 36. In turn, the supply of legal crops further decreases and price increases as shown in Figure 37. In the case of coffee beans, the increased price further exacerbates

Colombia's export trade problem because the increased price is even less competitive with the world price of coffee beans which have steadily decreased. (54:13)

Demand for chemical precursors also increases, but the chemicals are common and already in huge supply, and used in many different applications. Any increase in demand by traffickers would have very little effect on price or supply of chemicals.

From a national strategy perspective, the consequences of military interdiction against the labs could, but not necessarily, lead to the expansion of coca leaf production unless authorities can swiftly destroy the majority of labs thereby outpacing the ability of the cartels to compensate for expected losses. Given the high profit margins of smuggling discussed in chapter 4 coupled with the shortage of resources available to the Colombian police and military units, it is highly unlikely that swift interdiction of labs within producing countries could be successfully achieved unless U.S. military assistance is increased either through much more equipment or more direct U.S. personnel involvement. Even then, senior military officers like

Figure 37 Reduced Legal Crops

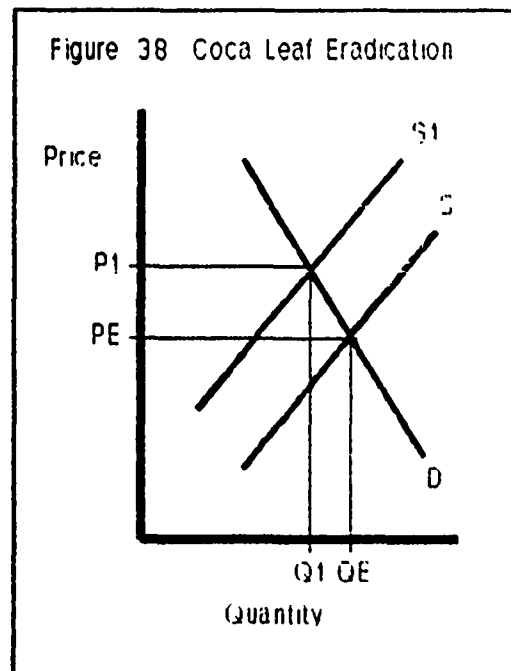


General Maxwell R. Thurman, who oversaw the invasion of Panama, predicts that traffickers would move their operations from Bolivia, Peru, and Colombia into neighboring countries like Venezuela, Ecuador, Brazil, Chile, Argentina, and Paraguay. (59:7) The prospect of the cartels migrating into these regions only exacerbates the current problem and produces a very negative outcome in the long run.

This scenario poses an interesting problem for policymakers. In the absence of any decrease in cocaine demand, should interdiction be stepped up or merely held at current rates? Is it possible that other approaches yield less potentially negative results? Does, for example, eradication of coca leaf increase or decrease the production of cocaine hydrochloride?

Eradication

The State Department believes that the supply of cocaine to the U.S. could be significantly reduced through massive herbicidal spraying to reduce coca cultivation by 50 percent. (60:8) In reality, quite the opposite effect is likely to occur. For example, Figure 38 shows the supply and demand for coca leaf. If coca plant farms were eradicated either through



herbicidal means or more direct means, i.e. fire, then quantity

is reduced to Q_1 and price increases to P_1 . In turn, the lower quantity yields less paste which consequently yields less cocaine hydrochloride and therefore results in higher prices for cocaine.

In the short run, eradication could produce the desired effect, but if demand for cocaine does not decrease, then demand for coca leaf will not decrease. In the long run, higher prices induce farmers to grow more leaves. It may also lead other farmers, currently producing legal crops, to substitute for cocaine, thereby expanding, or at least compensating for coca leaf supply lost to eradication. Adding more fuel to the fire, farm lobbies in the U.S. may even be guilty of hastening the substitution of legal crops for coca leaves.

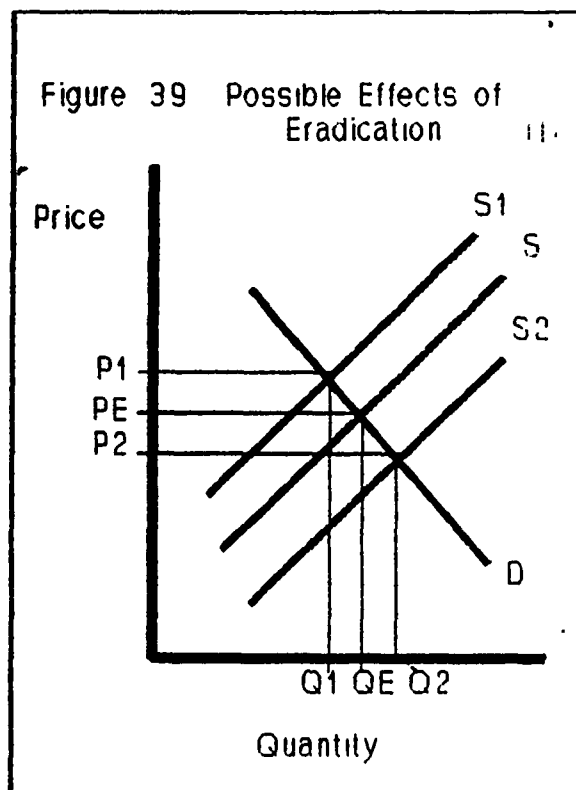
For example, Bolivia's soybean exports have quadrupled since 1980 to \$19.7 million. While this amount is miniscule compared with U.S. production, Congress has kept a tight rein on any money for Andean soybean assistance. Other lobbies have played up a cholesterol scare to dampen the demand for palm and coconut oils which drive more farmers from growing these crops. Sugar and coffee bean crops are other targets under the gun by American farmers and both import quotas and prices have contributed to Andean farmers to grow illicit crops. To date, it is estimated that over 60,000 Andean families have abandoned subsistence farming in favor of coca leaves over the last few years. (61:57)

The combination of U.S. protectionism, coupled with increased demand for coca leaves as a result of eradication,

eventually yields a coca leaf price somewhere between the eradication (P1) and pre-eradication phase (PE) as shown in Figure 39.

However, since coca leaf is a perennial weed with a life of between 15 -20 years, and since more farmers would be encouraged to plant the leaf during the eradication phase then over the long run, new farms could eventually out-pace eradication efforts and supply would increase to S2 as shown in Figure 39. (26:26; 62:79) This may have already manifested

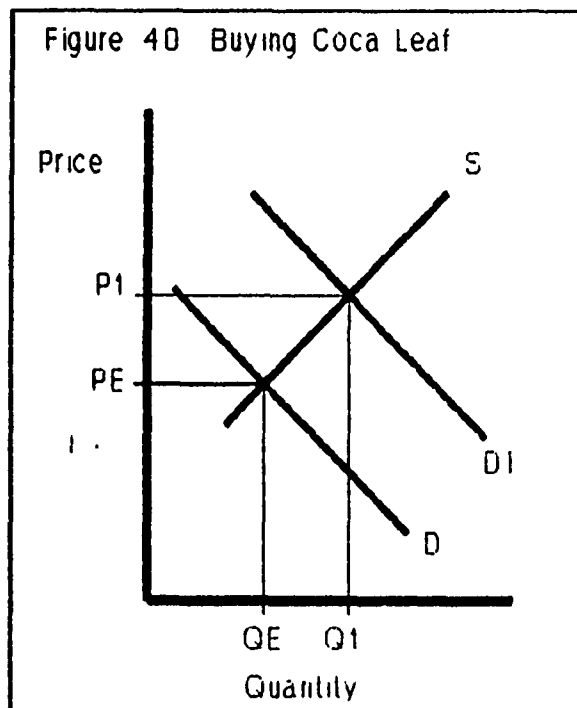
itself as evidenced by a recent report which suggests that there is a glut of coca leaf production in the Andean region. (63:18) Even the Department of State has acknowledged that coca cultivation, while stabilizing in Peru, has increased over 20 per cent in Bolivia and modestly increased in Colombia over the past year. (64:2) Senior military officers like General Lindsey, Commander of the U.S. Special Operations Command, sums up U.S. sponsored eradication efforts as an ineffective "weed eater" effort which only alienates the farmers. (65:1) Several other methods to eradicate coca leaves have been suggested by source country



officials to achieve the same policy goals.

For example, the Peruvian Ambassador to the United States suggested to the Senate Judiciary Committee that the U.S. make a one-time buy out of Peru's entire coca crop, which provides 70 percent of the plants processed into cocaine, in order to disrupt the Cartel's operations. (66:1; 67:A-3) How he would arrange for all the compasinos to deliver their goods only to government markets would be a challenge at best. But for the sake of analysis, how would the market actually behave under his proposal? First, his proposal has a short term effect on the market and in the long run nothing would substantively change. Secondly, in the short run, some leaves would be held back and sold to cartel operators, albeit at possibly higher prices only if the compasinos could convince the buyers.

Figure 40 shows the effect on market equilibrium price and quantity. The ensuing bidding war between government and cartel interests would drive price up eventually reaching equilibrium at P_1 . The farmer would get more for his production--and he would be neutral about who he sold to. In the long run, the cartel and the government would pay more

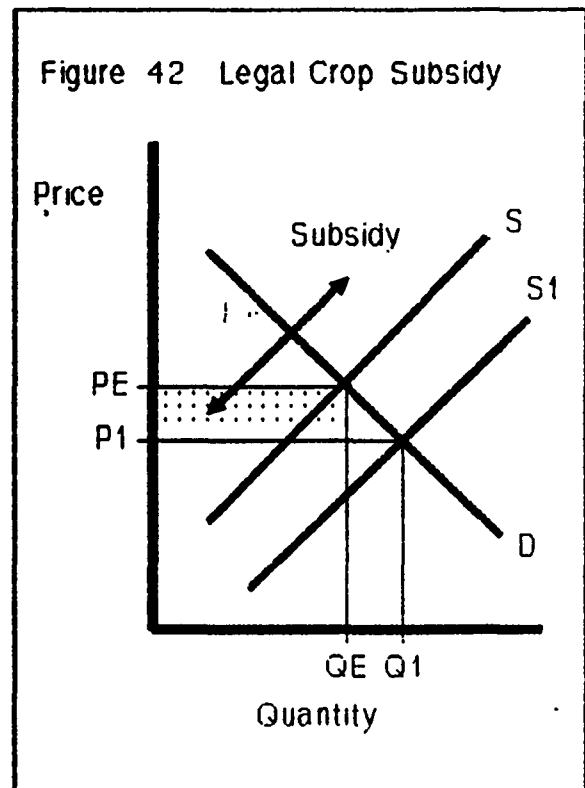
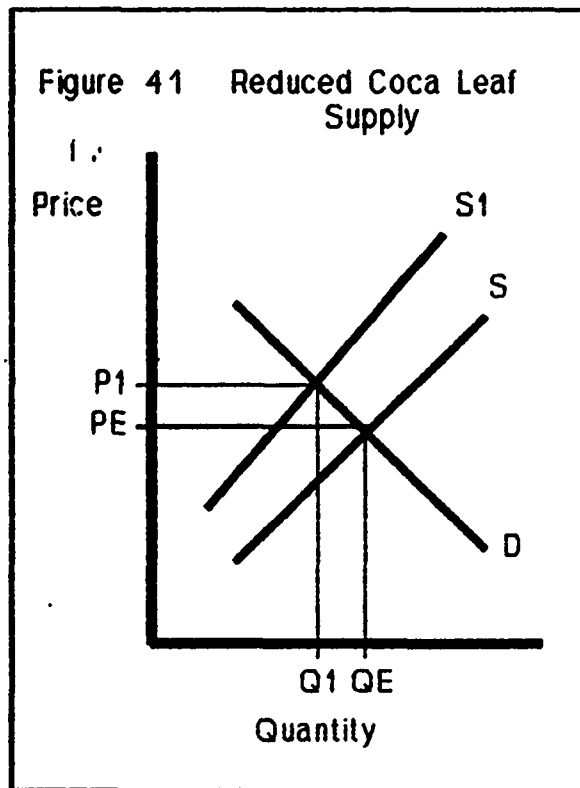


than the old equilibrium price and the new higher price would induce more farmers to grow coca instead of some cash inferior, but legal, crop. After all, cartel demand for coca leaf has not disappeared and that is why the Ambassador's proposal should be viewed as unacceptable. In addition, even if such a proposal could be implemented in the short run, the overall effect on cocaine production would only marginally affect import price because the cost of coca leaf is the cheapest production cost factor in the production of coca paste. (24:78).

In summary, eradication of coca leaves through direct means is probably a no-win game. The steady drop in the price of coca leaves over the past 90 days proves that there is already a glut in supply and recent reports suggest that 100 pounds of leaves are now selling for \$20 - \$30 less than the cost of production. (63:18-20) Suppose, however, that the U.S. and producing countries chose instead to offer farmers a subsidy on crops whose cash value was inferior to that of coca leaves (i.e. coffee beans, sugar, etc.)

Crop Substitution and Subsidy

In theory, this strategy should induce farmers to grow the subsidized crop instead of coca and the market supply and demand schedules for the coca leaf and substitute crop should produce the results in Figures 41 and 42. Farmers are induced to grow more coffee beans and less coca leaves. The long-term investment of such an approach is worth investigating because it achieves several positive benefits.



First, direct military action by source country or U.S. is avoided to achieve the desired result. Secondly, subsidizing other crop growth stabilizes the source country's economy. Third, this policy would undermine the ability of local insurgents to exploit peasants' output of coca leaves in exchange for protection money, thereby denying insurgents resources for weapons purchases. Given the glut of coca leaf, it would appear that the timing is perfect to induce farmers to substitute other crops. Indeed, it may take very little for them to convert production to a legal crop provided the farmers have a market to deliver their product.

Interdiction of Chemical Precursors

Interdiction of chemical precursors necessary to produce coca paste, base, and cocaine hydrochloride can be waged on two fronts -- within the borders of the source country and by controlling exports from supply countries.

As suggested earlier, the most efficient method of interdicting cocaine is at choke points like the processing labs. Likewise, the concentration of chemical precursors will be greatest at active processing labs. One raid on a cocaine laboratory near Medellin, Colombia in May, 1988, netted 154,000 gallons of ether and acetone -- most of which came from the U.S. That is enough chemicals to manufacture nearly 60,000 kilos of cocaine hydrochloride! Discovering active labs may be greatly facilitated by using overhead imagery to locate the vast quantities of toxic waste and pollution dumped by the operators of these labs. It is estimated that in 1987 alone 15 million gallons of kerosene, eight million gallons of sulfuric acid, 1.6 million gallons of acetone, and 1.6 million gallons of solvent were dumped into more than 150 South American rivers and streams. (68:14) But, are there even more efficient means to produce the same results? For example, would more stringent export controls on countries supplying chemicals to South American cocaine producers be equally effective?

The answer is that export controls could be more effective, but there is no consensus among exporting countries on how to implement better controls. For example, the new U.S. export

control legislation is a compromise solution that is sensitive to the needs of maintaining legitimate business. The U.S. law requires exporters of 20 key processing chemicals to notify the Drug Enforcement Agency (DEA) and keep records of each shipment abroad. Sales to new customers must be reported to the DEA 15 days in advance but requires no prior notification to "established" customers. Since the DEA estimates that the 47 percent of ether, acetone, and methyl ethyl ketone previously shipped from the U.S. to Colombia, Bolivia, Peru, and Ecuador went to produce cocaine, one could conclude that almost half of the established customer base will not be affected by the new export law. (68:12-14)

Under these circumstances, the export control law is hardly more than a bookkeeping exercise for both the DEA and the exporters. The law has only a marginal chance of stemming the flow of chemical precursors to illegal markets.

Unless a tougher export law for chemical precursors is enacted, it would appear that interdiction within the source countries would produce better results. However, if the U.S. adopts tougher laws, then other chemical-producing countries, especially those insensitive to U.S. interests, would most likely step in to fill the void in supply. Only a tough law recognized by all chemical producing/exporting countries would stop the flow of chemical precursors to drug traffickers and the prospects of such a law are dismal at best.

Interdiction in Transshipment Routes

The interdiction of airborne and seaborne vessels between cocaine-producing countries and the U.S. border is an enormous task. There are more than 1.6 million square miles to patrol in just the Caribbean and Gulf of Mexico. Over 50,000 foreign ships and 13 million tons of goods enter the U.S. each year. (69:77) The FAA has reported that over 78,000 known general aviation aircraft flew into the U.S. across the southern border alone. Further, there are over 290,000 registered and 4,000 unregistered general aviation aircraft in the U.S. Add to this number over 160,000 documented U.S. vessels including yachts, tugs, barges, and other commercial vessels and it is quite obvious that the potential target set is huge. (70:273) Compounding the problem are countries like the Bahamas, who offer a convenient geography -- some 2,000 cays and 700 islands, from which drug traffickers can stage final drug runs into the U.S. (71:12)

Given the target set and geography, locating, tracking, and intercepting suspected smugglers of cocaine or other illicit drugs requires not only a great deal of manpower, but high technology equipment as well. The results to date have been quite disappointing as previously discussed in this analysis. About the only positive thing that could be said about interdiction along the transshipment route is that the U.S. can show the world that it will spare no resources in its war on drugs.

Interdiction at the U.S. Borders

Including inlets, the total border of the U.S. covers 88,633 miles. (72:55) Over 250 million people cross these borders each year, 30 million air passengers arrive on a half a million commercial flights and 7.5 million containers arrive by land and sea routes. The task of interdicting at the borders is a monumental undertaking. Sealing the borders, as Congress suggested a few years ago, is simply impractical. (73:C5) Despite the challenge, the U.S. strategy over the last few years, has expanded the interdiction mission at the borders.

Since almost 50 per cent of the South American cocaine entering the U.S. is now shipped through Mexico, an undisclosed amount of U.S. Marines have been on joint patrolling missions with members of the U.S. Border Patrol along the Mexican border between El Paso, Texas, and Tucson, Arizona. (74:3; 75:F3) In mid-December, 1989, a marine reconnaissance team exchanged fire with suspected drug smugglers marking the beginning of a new pattern of military involvement in the war on drugs. (76:13) As a consequence, the Mexican government has accused the U.S. of militarizing its southern borders. (77:10A) The North American Aerospace Defense Command (NORAD) is now tracking suspected drug carrying aircraft and NORAD interceptors are now trailing these aircraft when U.S. Customs' planes are unavailable. (78:15-16; 79:2) In addition, Forces Command is expected to devise a plan to provide military assets to law enforcement agencies along the border. (80:16) Even defense contractors, alarmed by emerging

world peace and shrinking defense budgets, are trying to lure law enforcement agencies into buying more sophisticated detectors, sensors, and tracking devices to interdict drugs. (81:F1) But what is the effect of interdiction in the transshipment route and at the border on the drug market?

As pointed out earlier in this analysis, the total amount of cocaine interdicted last year was approximately 200,000 pounds. Whenever an agency reports a drug bust there is a tendency to characterize the seizure in terms of street value or its effect on reducing the supply in the drug market. Unfortunately, neither characteristic reveals what the real effect is on either supply or supplier nor on the effects on demand or consumer. As a result, conclusions often lead to incorrect policy-making decisions and strategies.

Cartel's Surplus Management Strategies

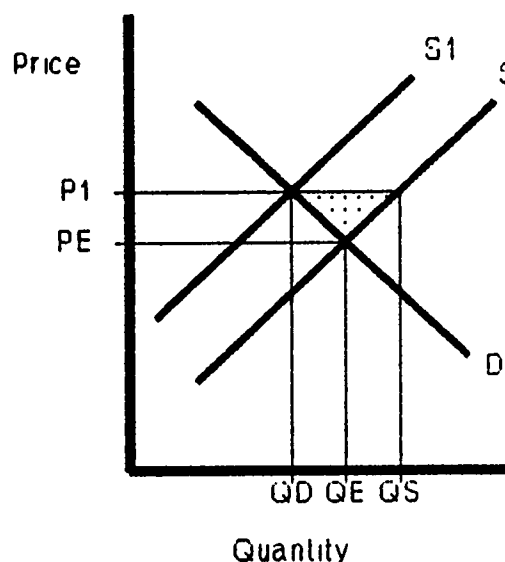
For example, if last years interdiction efforts were not achieved -- that is, suppose almost 100,000 extra kilos of cocaine were landed in the U.S., then what would be the effect on the drug market? First, if, as suggested earlier, there is a glut of cocaine supply in the U.S., then the drug market would be as shown in Figure 43. (82:6A) At price P_1 , consumers would demand quantity Q_D while sellers were offering quantity Q_S . The only way the cartel could eliminate the surplus is to either reduce price to P_E thereby arriving at market equilibrium quantity of Q_E or by decreasing supply to S_1 which also yields quantity Q_E . Remember that demand has not shifted, right or

left.

Since street price has been steady over the past few years, it would appear that the cartel is probably reducing supply to manage surplus rather than lowering price. It could be that the cartel is aware that cocaine demand is somewhat inelastic, then even a significant drop in the price of cocaine would have only a proportionately less increase in quantity (Q_D to Q_E). In fact, price would have to significantly drop to eliminate the surplus and that could affect profitability.

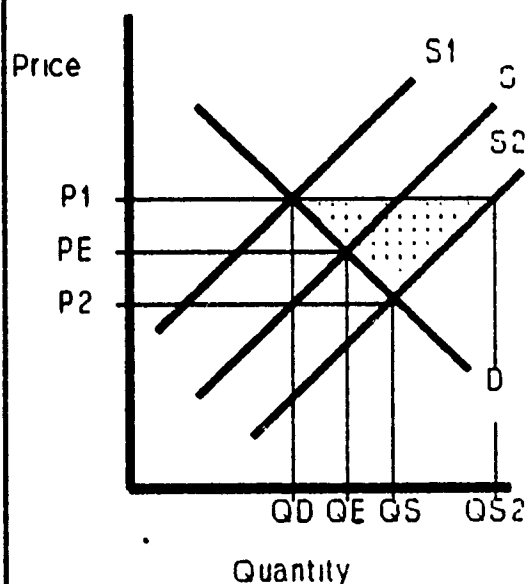
In effect, the cartel's strategy is identical to what interdiction was intended to achieve. But, what happens if the interdicted quantity of 100,000 kilos are added to cartel supply? Figure 44 shows the effect. The increase supply, represented by S_2 shifts the supply curve to the right and expands the surplus to the

Figure 43 Cartel's Surplus Management



In fact, price would have to drop to eliminate the surplus and that could affect profitability.

Figure 44 Cartel's Extra Surplus Management



shaded triangular area bounded by the new equilibrium price or P_2 and the current market price of P_1 . At price P_1 , the cartel has the same two choices presented earlier to eliminate surplus -- either reduce price, and in this case it would have to reduce it lower than in the previous example or scale back supply to S_1 . Here again, it is most probable that the cartel would probably reduce supply rather than decrease price for the same reasons as given in the above case.

But, if the cartel is inclined to provide less cocaine, then what is the value of interdiction, especially on a market that already is self-governing? Recall that the cartel can not manipulate demand, but only quantity demanded through price.

Furthermore, does it make sense to expend billions of dollars to interdict cocaine when there is a surplus and the cartel is only minimally damaged? At production costs of \$4,000 per kilo, the cartel only lost \$400,000 million for the 100,000 kilos which were interdicted. Meanwhile, its profits are in the billions for the cocaine that is actually landed and distributed in the U.S. Economically, interdiction is neither efficient or effective, yet both the Congress and the administration have made it the cornerstone of our national drug strategy and many Americans believe it is required. From this discussion, it would appear that there is no value from interdiction unless the market is in equilibrium or where a shortage of cocaine exists. As Figure 45 shows, under these conditions, holding price constant at P_E , interdiction shifts the supply curve to the left

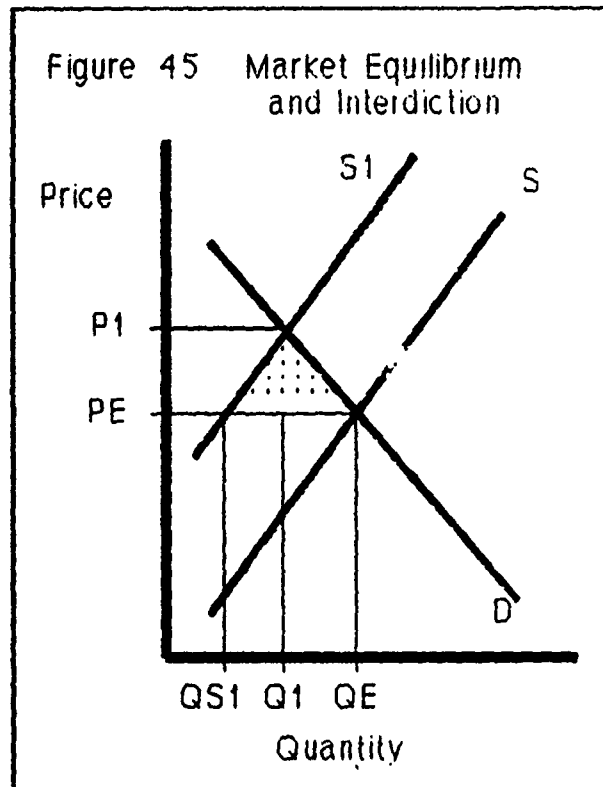
(decreases supply) and creates a shortage represented by the triangular area bound by price P_E and what the new equilibrium price should be -- P_1 .

The cartel, as a rational seller, would increase price under these circumstances to take advantage of the situation. In the process, quantity is reduced from Q_E to Q_1 which is exactly what the administration hoped to achieve.

The obvious conclusion drawn from the above analysis is that interdiction works

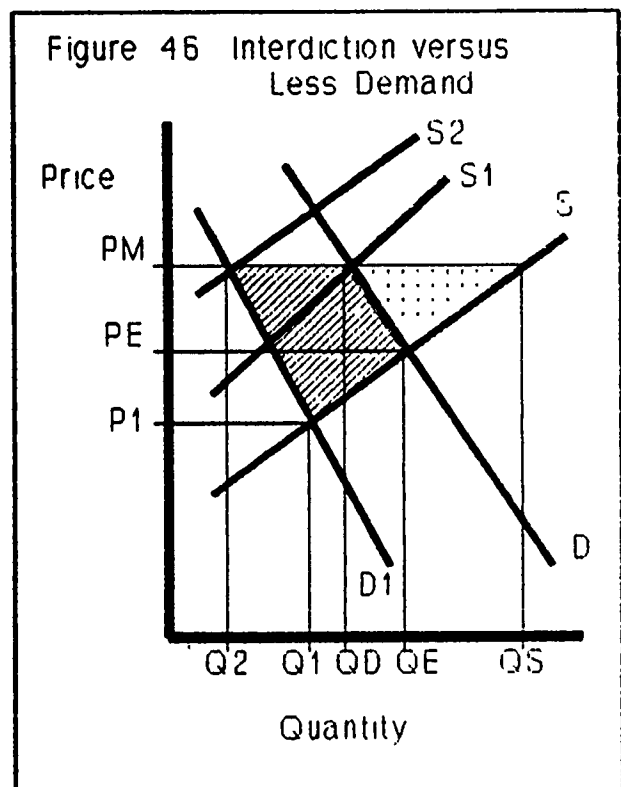
well when the market has cleared (reached equilibrium), but has virtually no effect if there is a surplus of cocaine. As long as the cartel ships a surplus of cocaine to the U.S., market forces produce the same result as desired by interdiction. Therefore, funds expended to interdict under these conditions are, in effect, being needlessly wasted.

Instead, it would appear that expending funds on reducing demand would have a far greater impact on the cartel's potential behavior. For example, if the billions of dollars expended on interdiction are instead diverted to efforts to increase



domestic treatment and prevention programs then the effect on the cartel is potentially more debilitating than any interdiction campaign could ever achieve. Assume the drug market has a surplus of cocaine represented by the lightly shaded area in Figure 46.

Let price PM represent the real price of cocaine in the market place and let while price PE represent the cocaine market in equilibrium. As explained earlier, in order for the cartel to eliminate the surplus represented by the lightly shaded area, it would have to either reduce price to PE or reduce demand to $S1$. Now suppose that demand shifted from D to $D1$ as a



result of an aggressive and expanded drug treatment and education program. This in turn creates a further surplus represented by the cross-hatched area. At price PM the cartel now has a total surplus represented by the combination of the two shaded areas. Here again the cartel has only two strategies to reduce surplus. It can either decrease price to $P1$ or decrease supply to $S1$ to clear the market. If it chose to hold price at PM and shift supply, the effect is the same as what interdiction was designed

to achieve, but perhaps at a much lower cost. and having a more lasting effect in the long run.

The challenge of course is to synchronize and balance the attack on supply and demand given changing market conditions and available resources. The last chapter provides a summary of this analysis and offers a few recommendations policy makers should consider in waging the war on drugs.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Almost all issues pertaining to the cocaine drug problem can be reduced to questions regarding supply, demand, and market price. Mechanisms employed by government to control the supply and demand of legal goods can be equally applied to the control of the cocaine drug market. On the other hand, traffickers employ the same techniques used by legitimate businesses to further their ends. But, there are limitations and constraints on what either the cartel or government can do to influence the behavior and attitudes of the actors in the drug market.

The South American drug cartel is a powerful and ruthless confederation of separate organizations. Over the past ten years, it has managed to vastly increase its total revenues by taking over the wholesale and at least the first regional sales distribution system in the U.S. By doing so, it has set an artificially low import price of cocaine on itself but a very real price on its competitors. Even though the cartel can set price, it must change supply, otherwise it can potentially put the cocaine market into disequilibrium --that is, it can cause either a shortage or surplus of cocaine as a function of price.

Increased quantity demanded of cocaine, particularly by addicts, has induced the cartel to expand supply. Crack cocaine, introduced in 1985, is widely available, inexpensive and has significantly contributed to the expansion of cocaine supply.

All indications are that the cartel exports somewhere between 500,000 to 700,000 pounds of cocaine, of which 300,000 to 500,000 pounds are potentially landed in the U.S.

As of today, there is a surplus of cocaine in the U.S. and evidence suggests that the cartel may be diverting some of the additional excess to other countries. The cartel could lower price in the U.S. to rid itself of the surplus, but has not chosen this option. Presumably, this strategy only garners the cartel a marginal increase in revenues because quantity demanded would only modestly increase.

Casual use of cocaine in the U.S. appears to be on the decline while addictive use has steadily increased over the past few years. Today, over 80 percent of the cocaine supplied to the U.S. is consumed by addicts and all indicators point towards increased addict demand in the near future. Addict demand is inelastic compared to casual demand for cocaine -- addicts' quantity demanded responds less proportionally to changes in cocaine price. Casual demand responds more directly with changes in price.

Current U.S. strategies target only 30 percent of the drug budget to reduce demand while 70 percent goes to fight the supply side of the equation. Of the 30 percent devoted to fight demand, less than 10 percent of the budget targets the treatment of addicts. Yet, addicts consume over four times the cocaine consumed by casual users.

U.S. strategies to break up the U.S.-based cartel distribu-

tion system are also under funded. Only two percent of the federal budget goes to a federal task force to target the high level traffickers and leaders operating in the U.S.

Interdiction rates for cocaine are estimated to be 35 percent in 1988 and somewhat higher in 1989 but still fall short of the amount necessary to significantly change the behavior of the cartel. Interdiction rates of at least 50 percent and higher are necessary to begin altering the cartel's willingness to produce and deliver cocaine to U.S. shores. As long as the cartel can continue to produce a surplus, interdiction has only a marginal effect on its operations and profitability.

Interdiction of cocaine processing labs in cocaine-producing countries is the most cost effective and efficient means of reducing cocaine supply through military and law enforcement means. Unfortunately, the resources available to governments of cocaine-producing countries are extremely limited. Consequently, this strategy can lead to the expansion of coca leaf farms as the cartel continues to out-pace government actions to find and destroy processing labs.

In the long run, eradication of coca leaves through herbicidal or other direct means, induce farmers to grow more coca crop and ultimately increase coca leaves under cultivation. Government buy-outs of coca leaves produce similar results.

The export of chemical precursors for the manufacture of cocaine are inadequately controlled for export to potential cocaine-producing countries. U.S. laws protect the concerns of

legitimate chemical exporters while international export controls are virtually non-existent.

Many Andean farmers have been driven to cultivate coca leaves because traditional crops have become cash inferior and uncompetitive in the market place. In addition, tariffs and other protectionist measures by potential world markets have made Andean legal crops even less desirable to produce. But, coca leaf crop substitution through subsidy of cash inferior crops by governmental agencies offer the possibility of reducing the cultivation of coca leaves over the long run.

Interdiction of cocaine in the transshipment routes and at the U.S. borders is inefficient, ineffective, costly, and has virtually had no impact on the willingness of the cartel to expand the supply of cocaine into the U.S. It can be argued that the amount of cocaine that has been interdicted by government agencies has only helped the cartel manage its surplus of cocaine in the U.S.

In conclusion, casual use of cocaine in the U.S. appears to be on the decline, while addictive use has steadily increased since 1981. Efforts to interdict cocaine, either in producing countries, transshipment routes, or at the U.S. borders have increased over the past few years but the amount of cocaine landed in the U.S. has steadily increased and currently outstrips demand. U.S. strategies to combat the drug problem are not being properly synchronized or scoped to effectively and efficiently attain national objectives.

As long as there is market demand for cocaine, the cartel and other independent drug traffickers will continue to produce and deliver cocaine to U.S. and other world markets. Interdiction only marginally upsets the cartel's ability to deliver.

Recommendation

To win the war on drugs, the grand U.S. strategy must be structured to achieve a time-phased completion of four specific strategies and objectives: reducing addict demand; destroying the U.S.-based cartel distribution system; subsidizing legal crop growth in cocaine-producing countries; and synchronizing the interdiction campaign with the other three strategies.

The first and most important of these objectives is to greatly increase the funding of drug rehabilitation programs, especially programs dealing with addict consumption of cocaine. To achieve this end, it is recommended that federal and state money not be used to finance new treatment centers. Instead, government agencies should "contract-out" for services with existing private hospitals, clinics, and other facilities. In this manner, the expanded war on addict demand can begin almost immediately without waiting for the construction of new facilities.

The importance of aggressively pursuing this strategy cannot be underestimated. Every addict which can be rehabilitated represents the equivalent of rehabilitating 125 casual users of cocaine. As more addicts are rehabilitated, the cartel's surplus management problem becomes even more acute and it is forced to

either lower price or scale back supply to put the market into equilibrium. Since the cartel has held price above market equilibrium over the past several years there is no reason why it would choose to lower price as quantity demanded begins to decrease as a result of increased rehabilitation efforts. Consequently, it will probably reduce supply, thereby achieving the same end as interdiction but through other means. If the cartel did choose to lower price to rid itself of surplus then the next strategy discussed fights its profit-making potential and willingness to supply cocaine at current quantities.

The second most important strategy and objective is to launch a concerted effort to destroy the cartel's center of gravity in the U.S. -- the wholesale and first level distribution system. To achieve this objective, additional federal funds should be provided to increase the size and scope of the Organized Crime Drug Enforcement Task Force to lead the effort in dismantling the cartel's U.S.-based operations. Dismantling the cartel's U.S.-based infrastructure essentially puts the cartel back to its pre - 1981 profit making position where all it could garner was the landed price of cocaine. Under these conditions, even today's interdiction rates of between 35 to 40 percent could significantly change the willingness of the cartel to continue supplying cocaine. At best, the cartel would scale back production, pay more to protect what it was willing to ship, and increase its landed price of cocaine. All three of the expected results contribute to achieving the national objectives.

The third strategy targets the Andean farmers who grow coca leaves in order to make a living. Since eradication and other direct means only increase cultivation of coca leaves in the long run, it is recommended that cocaine producing countries and cocaine importing countries (U.S., Europe, etc.) establish a fund to subsidize the growth of legal crops in exchange for coca. In addition, tariffs and other trade barriers should be lifted to permit the legal crops to flow unimpeded into world markets.

This strategy, over the long run, effectively blocks the cartel's ability to rely on inexpensive sources of production factors necessary to manufacture cocaine. Its only recourse would be to pay farmers more money to grow coca leaves which increases production costs. As more farmers substitute coca leaves for legal crops, the cartel will have less coca leaf reserves from which it can replace cocaine lost to interdiction.

The last strategy recommends a rerocus of the current interdiction campaign. Since interdiction, under current market conditions, is ineffective, it is recommended that federal resources be reduced from current operating levels until the other recommended strategies have, at least, partially achieved some measure of success. For example, if the cocaine market moves towards equilibrium, then the military and other federal agencies should increase their efforts to interdict cocaine.

As for now, military assistance to producing countries should be limited to training, equipment, and intelligence gathering means, but no direct U.S. intervention. Eradication in

producing countries should be abandoned because it does not reduce coca leaf acreage in the long run. Interdiction efforts in transshipment routes should be reduced from current levels since the cost benefit of this approach is the least efficient of all other approaches. Military interdiction at U.S. borders should be limited to providing other federal agencies technical surveillance and communications, but no military patrols or inspections. The funds currently budgeted for expanding the military's involvement in the war on drugs should be diverted to the other recommended strategies.

On the surface, it may appear that reducing military involvement is tantamount to failure. On the contrary, it is not. Military force can be used effectively under the right set of conditions and at the appropriate time. But, those conditions do not exist at this time.

Lawmakers, political, and military leaders must not misunderstand the character of the drug problem and confuse it with something that is alien to its nature. The drug problem in the U.S. is a manifestation of social and economic issues. It must first be fought with social and economic instruments or power. Interdiction, especially by military forces, can play a part only after the "battlefield" has been properly prepared. Until then, it would be wiser to limit the military's role and put the resources on more effective national strategies.

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